

# Analyze Your Data

Salesforce, Summer '18





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# **ANALYTICS**

# Explore Data and Take Action with Einstein Analytics

Salesforce Einstein Analytics (formerly known as Wave) is a cloud-based platform for connecting data from multiple sources, creating interactive views of that data, and sharing those views in apps. It's a better way to distribute insight to business users so they can understand and take action on changing information.

| Online Help | Other Resources |
|-------------|-----------------|
|-------------|-----------------|

| Get to Know Analytics                         |  |
|---|--|
| Get Started Using Analytics                   | <ul> <li>Einstein Analytics Learning Map</li> <li>Video: Personalize, Collaborate, and Take Action from the Analytics</li> </ul> |
|   | Tab (English Only)   |
|   | Trailhead: Analytics Basics  |
|   | Trailhead: Analytics Dashboard Navigation  |
|   | <ul> <li>Video:  Build Unique Einstein Analytics Apps in the Analytics Studio<br/>(English Only)</li> </ul>                      |
|   | <ul> <li>Video: Get Quick Answers from Your Data with Conversational<br/>Exploration (English Only)</li> </ul>                   |
| Access Insights from the Analytics Mobile App | Analytics for iOS Mobile Help  |
|   | Analytics for Android Mobile Help  |
|   | Trailhead: Mobile Analytics Exploration  |

| Enable Analytics and Integrate Data     |   |
|---|---|
| Set Up the Analytics Platform   PDF     | <ul><li>Trailhead: Analytics Administration Basics</li><li>Analytics Security Implementation Guide PDF</li></ul>  |
| Load Data into Analytics Datasets   PDF | <ul> <li>Video: Trend Report Data in Analytics (English Only)</li> <li>Trailhead: Analytics Data Integration Basics</li> <li>Analytics External Data API Developer Guide</li> <li>Analytics External Data Format Reference</li> </ul> |

| Build, Customize, and Develop Analytics Assets |  |
|--|--|
| Explore and Visualize Your Data                | <ul> <li>Einstein Analytics Learning Adventure App</li> <li>Video: Introduction to Explorer</li> <li>Trailhead: Desktop Analytics Exploration</li> <li>Trailhead: Create a Custom Map for Analytics Charts</li> <li>Trailhead: Build a Gauge Chart That Visually Identifies Regional Data</li> </ul> |
| Build Analytics Dashboards                     | <ul> <li>Video: Build Interactive Analytics Dashboards (English Only)</li> <li>Trailhead: Analytics Dashboard Building Basics</li> <li>Trailhead: Create a Product Pipeline Dashboard with Analytics Charts</li> <li>Analytics Bindings Developer Guide for Dashboards</li> </ul>                    |
| Embed and Customize Analytics                  | <ul><li>Dashboard JSON Reference</li><li>Extended Metadata (XMD) Reference</li></ul>   |
| Manage and Share Analytics in Apps             | Analytics Templates Developer Guide  |
| Develop on the Analytics Platform              | <ul><li>Analytics REST API Developer's Guide</li><li>Analytics SAQL Reference</li></ul>  |

| Accelerate with Prebuilt Analytics Apps and Templates |                                  |
|---|----------------------------------|
| Create Apps from Analytics Templates: Start Here      |                                  |
| The Sales Analytics App                               | Trailhead: Sales Analytics App   |
| Service Analytics App                                 | Trailhead: Service Analytics App |
| The Field Service Analytics App                       |                                  |
| Event Monitoring Analytics App                        | Trailhead: Event Monitoring      |
| B2B Marketing Analytics App                           |                                  |

| Detect More Insights with Einstein Discovery |   |
|--|---|
| Find Insights with Einstein Discovery        | Trailhead: Gain Insight with Einstein Discovery |

# **Get Started Using Analytics**

With just a few clicks, you can run Analytics apps, dashboards, and lenses.

#### IN THIS SECTION:

#### Learn What You Can Do with Analytics

Introduce yourself to the Analytics way of data exploration.

#### **Open Analytics**

Access your Analytics home page from a tab within Salesforce. Alternatively, go to the Analytics environment by opening the app menu or app launcher in the Salesforce header and then clicking **Analytics Studio**.

#### Get Oriented on Your Analytics Home Page

With Analytics, you can take either a business user path or a builder path, depending on what you want to do, and you can switch paths at any time.

#### View, Collaborate, and Take Action from Analytics

View conversational explorations of your data, and personalize your Analytics experience with saved dashboard views. Collaborate with features such as notifications, annotations, presentation mode, and downloading filtered data from Analytics. Use custom menus in lenses and dashboards to take action in Salesforce directly from Analytics.

#### **Analytics Glossary**

Familiarize yourself with common Analytics terminology.

#### Learn Analytics with Trailhead

Trailhead is the fun and free way to learn Salesforce. Now you can get acquainted with Analytics through Trailhead, using a special Analytics-enabled Developer Edition org.

# Learn What You Can Do with Analytics

Introduce yourself to the Analytics way of data exploration.

#### IN THIS SECTION:

#### Exploring and Visualizing Your Data Interactively

Data exploration is an iterative process. It typically involves these steps: view, explore, refine, save, and share.

#### Collections of Data in Analytics

Analytics collects and organizes your data in datasets, lenses, dashboards, and apps. These collections, also known as "Analytics assets," represent levels of data refinement—from raw data that's uploaded from your source systems to highly curated, packaged views of your data.

#### **Data Exploration Concepts**

As you learn how to explore and visualize your data, it's helpful to review key concepts such as visualization, measure, and dimension.

#### What Is a Dashboard?

An Analytics dashboard is a collection of widgets that work together to tell a data story from multiple angles. Depending on what you want the dashboard to show or how to behave, you can add different widgets, such as key performance indicators, charts, tables, filters, and images.

#### Key Elements of an Analytics Dashboard

A dashboard isn't just for reading. It's for carrying on a conversation based on one or more datasets that matter to your company. Don't just look at the pictures—use the tools on the dashboard to dive deeper into the data that you care about. Go ahead, click around, and explore!

#### Query Your Data to Know Your Business

It's great to have a gut feeling about how well your business is doing. However, before you take action, test the feeling against your data. Ask your data questions.

#### SEE ALSO:

Converse with Your Data (Beta)
Learn to Use Explorer
Build Analytics Dashboards
Manage and Share Analytics in Apps

# Exploring and Visualizing Your Data Interactively

Data exploration is an iterative process. It typically involves these steps: view, explore, refine, save, and share.



- View—View the data set.
- Explore—Get to know the boundaries and shape of your data. Play with different views, zoom in and zoom out, and see what you get with different charting options.
- Refine—Narrow your view to the most important data. Decide the level of detail and categorization that's easiest for your colleagues to understand. Choose the most appropriate chart visualization.
- Save—Save your work.
- Share—Share your view with others. For a more packaged presentation, use your visualization to build a dashboard.

# Collections of Data in Analytics

Analytics collects and organizes your data in datasets, lenses, dashboards, and apps. These collections, also known as "Analytics assets," represent levels of data refinement—from raw data that's uploaded from your source systems to highly curated, packaged views of your data.

- A dataset contains a set of source data, specially formatted and optimized for interactive exploration.
- A lens is a particular view into a dataset's data. It's where you do exploratory analysis and visualization.

- A dashboard is a curated set of charts, metrics, and tables based on the data in one or more lenses.
- An *app* is a purpose-built set of analytics and answers about a specific area of your business. With apps, you can provide pathways through your data, plus powerful tools for spontaneous, deep explorations. After creating dashboards, lenses, and datasets, organize apps to present dashboards in relevant order, and then share apps with appropriate groups.

# **Data Exploration Concepts**

As you learn how to explore and visualize your data, it's helpful to review key concepts such as visualization, measure, and dimension.

A *visualization* is commonly a chart or graph, such as a bar chart, donut chart, timeline, or heat map. It can also be data in tabular form, such as a comparison table or pivot table. Every visualization has an underlying query, which is how Analytics retrieves information from the source data.

A *measure* is a quantitative value, like revenue and exchange rate. You can do math on measures, such as calculating the total revenue and minimum exchange rate. Measures have names (revenue) and values (\$1,000,000). When you're viewing a chart visualization in Analytics, it's important to remember:

- The chart either shows a slice of your data based on the number of or amount of something, or it shows tabular data.
- A measure is typically *aggregated* in some way, which means that it's displayed with some math already applied to it. For example, when you first view a dataset, you often see a simple aggregation such as the count of the number of rows. You typically aggregate by a different method—sum, average, maximum, and so on—as you explore and change or add measures, but you always specify how you want to aggregate at the time when you select the measure.
- You can identify measures by their position (the far left items in the top left corner of a lens) and by the text that indicates the aggregation method (such as Sum of Revenue).
- Warning: If you perform a query that aggregates measures—like sum or group by—and the resulting value exceeds the maximum for a numeric field (36,028,797,018,963,967), the value overflows and Analytics returns an incorrect result.

A dimension is a qualitative value, like region, product name, and model number. Dimensions are handy for grouping and filtering your data. Unlike measures, you can't perform math on dimensions. Like measures, dimensions also have names (region) and values (northeast). Time is usually considered a dimension rather than a measure.

#### What Is a Dashboard?

An Analytics dashboard is a collection of widgets that work together to tell a data story from multiple angles. Depending on what you want the dashboard to show or how to behave, you can add different widgets, such as key performance indicators, charts, tables, filters, and images.

When you share Analytics data via a dashboard, you're setting up your audience members to do some exploring of their own, without turning them loose on the whole data set.

One use of a dashboard is to provide a focus for your audience. A dataset can contain vast amounts of data. Some of that data is relevant to specific questions that your audience has; some of that data is irrelevant noise. Data that's critical to one set of questions is sometimes noise in relation to another set of questions.

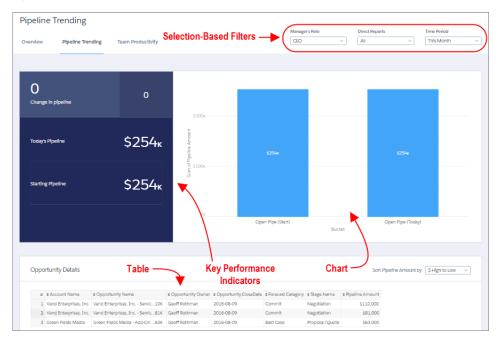
Keep in mind that even though we call it a dashboard, we're actually doing much more with this interface than we do with a traditional dashboard in a car. This dashboard doesn't just tell us what's changed; it invites us to dig deeper into the underlying data. It's like using the speedometer in a car to tell us not just how fast we're going but how our speed has changed at various points in our trip, how traffic conditions ahead of us are changing, and how those changes affect our arrival time.

#### SEE ALSO:

Build Analytics Dashboards
Build a Dashboard with the Classic Designer

# Key Elements of an Analytics Dashboard

A dashboard isn't just for reading. It's for carrying on a conversation based on one or more datasets that matter to your company. Don't just look at the pictures—use the tools on the dashboard to dive deeper into the data that you care about. Go ahead, click around, and explore!



You read a Salesforce Analytics dashboard interactively by clicking its displayed elements. Every element is a picture of a live, filtered query.

#### **Selection-Based Filters**

A selection-based filter lets you apply whatever filters you wish while viewing the dashboard. For example, set the minimum and maximum values in a range widget to make the dashboard show the amounts that fall within that range. These types of filters are often tied to each other so that you can progressively drill deeper. For example, use one filter to look at sales of a product. Then use the next to filter sales by region. Finally, use another to filter sales by account. The dashboard shows the results based on all three filters. There are different types of selection-based filter widgets: date, list, range, and toggle.

#### **Key Performance Indicators**

Some information is best measured by a single number, also known a key performance indicator. Some number elements can be filtered based on selections in charts and filters. For example, in a bar chart that shows individual salespeople's pipelines, click a bar to focus on a particular person's pipeline. Notice that the number changes from showing the total value for all salespeople to show the value for the selected person.

#### Charts

A rich variety of charts shows you data from multiple angles. Many parts of a chart are interactive. For example, click a bar in a bar chart and watch what happens. Clicking a bar filters the query that the bar chart represents. Your revision changes other values in this chart, values in other charts, and number displays.

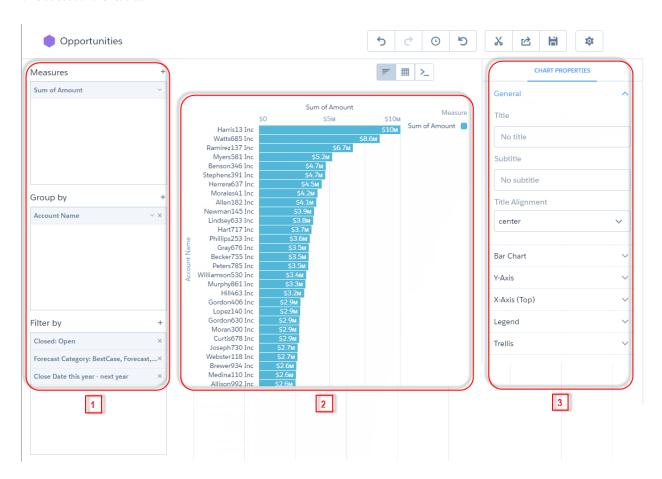
#### **Tables**

A table provides the record-level details. For example, a chart can show you a performance summary for each region, but the table can show you the opportunity-specific details. You can sort tables to show the top and bottom records. You can also create calculated columns in tables to compute values based on existing data.

# Query Your Data to Know Your Business

It's great to have a gut feeling about how well your business is doing. However, before you take action, test the feeling against your data. Ask your data questions.

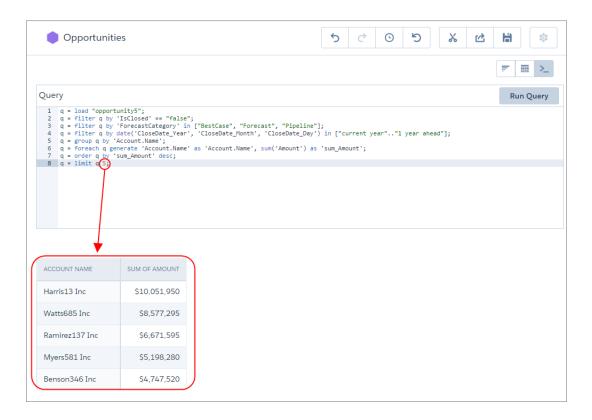
The easiest method for asking questions about data in datasets is to use the explorer. You ask questions in the form of queries. Use the left panel (1) of the explorer to create your query. You can perform calculations (referred to as measures), like sum of amount or average case duration. To break down the measure across different areas, group it by descriptive fields (known as dimensions), like region or owner. To find the top or bottom performers, sort the measure in descending or ascending order. Then, if needed, apply filters to focus on a subset of the results.



The middle explorer panel (2) shows a visual representation of the query results. You can display the results as a chart or table. When in chart mode ( ), you can choose which chart type to use—Analytics offers many. In table mode ( ), you can display the dataset records as a values table or create calculated fields and display them in a compare table. And, yes, pivot tables are also possible.

The right explorer panel (3) shows the visualization properties—configure them to modify the appearance of the chart or table. For instance, you can remove the legend, change the axis scale, or add a title. To view this panel, click ...

If you're more advanced, write your own custom queries using Salesforce Analytics Query Language (SAQL) notation. In SAQL mode ( ), you have more flexibility to write robust queries, like ones that span multiple datasets or have modified query limits. For example, if the results are sorted in descending order, you set the limit to 5, and click **Run Query**, the query returns only the top five accounts.



#### IN THIS SECTION:

#### Monitor Your Business Regularly with Analytics Dashboards

Analytics dashboards are populated with your data based on queries that you define. To continually get answers to common questions, save and organize your queries in interactive Analytics dashboards. Each time you open the dashboard, the queries get the latest results based on the available data.

#### Answer Ad Hoc Questions with Analytics Lenses

Dashboards are great for answering common questions, but sometimes you don't have a question in mind. You just want to poke around your data and ask questions as you notice things. To explore your data, open a dataset and create ad hoc queries. To revisit the query later, save it as a lens. The lens includes the query and the visualization—how the results appear. Like dashboards, lenses can be shared.

### Monitor Your Business Regularly with Analytics Dashboards

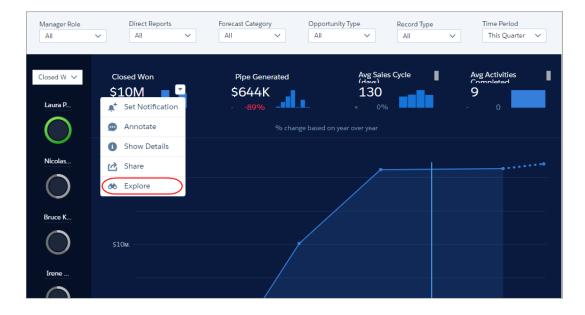
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As the sales executive, the start of your day might include a cup of coffee and the following sales leader dashboard. Each component is based on a query. For example, the timeline chart component shows the cumulative opportunity amount for each week of this quarter. The leaderboard in the left column ranks reps by sales (closed won opportunities).



Because of built-in dashboard interactivity, you don't have to add more queries to ask follow-up questions. For example, to focus on an individual's performance, select the rep's donut chart in the leader panel on the left. Analytics filters the dashboard results based on the selected rep. Behind the scenes, Analytics modifies the underlying queries, filtering the results to get the specific rep's opportunities.

If the dashboard can't be used to answer a question, hover over a dashboard component and click **Explore** to create a new query based on the same dataset.



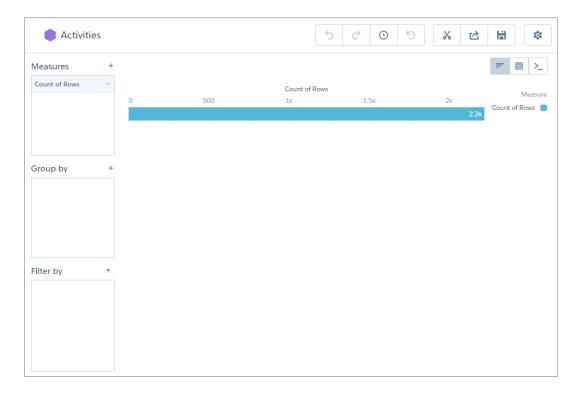
SEE ALSO:

Manage Steps for Widgets

### Answer Ad Hoc Questions with Analytics Lenses

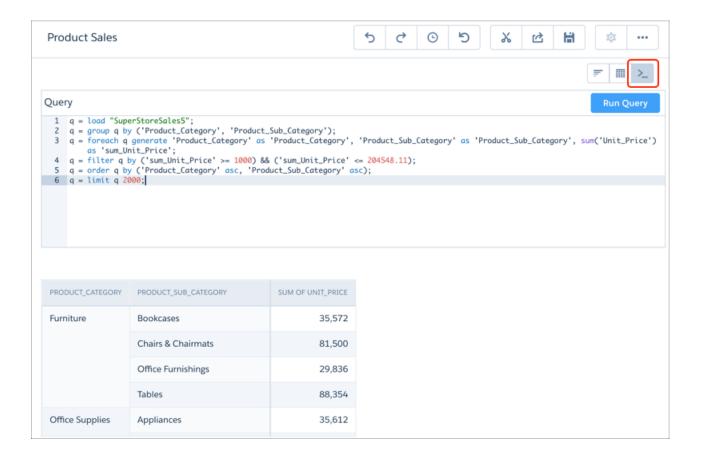
Dashboards are great for answering common questions, but sometimes you don't have a question in mind. You just want to poke around your data and ask questions as you notice things. To explore your data, open a dataset and create ad hoc queries. To revisit the query later, save it as a lens. The lens includes the query and the visualization—how the results appear. Like dashboards, lenses can be shared.

When you open a dataset, the explorer shows the number of dataset rows as a bar chart, by default.



To change the query, add measures, groupings, and filters to the Measures, Group by, and Filter by boxes. To represent the results as a different chart type, click . To represent the results as a table or to create calculated fields based on existing fields, click . If you're more advanced and want a more robust way to create SAQL queries, click to manually enter the query.

Analytics Get Started Using Analytics



To add a query to a dashboard, click 👗 to clip it.

SEE ALSO:

Explore and Visualize Your Data

# **Open Analytics**

Access your Analytics home page from a tab within Salesforce. Alternatively, go to the Analytics environment by opening the app menu or app launcher in the Salesforce header and then clicking

#### Analytics Studio.

To start in the Analytics Studio, click the tile (1). To start in the Analytics tab, click the Analytics item (2). Each environment allows easy movement to the other.

# **EDITIONS**

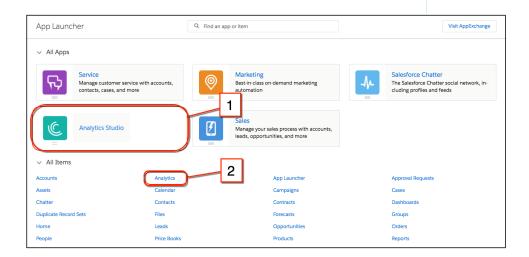
Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

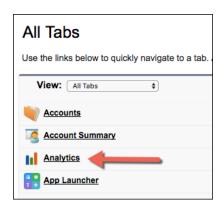
# **USER PERMISSIONS**

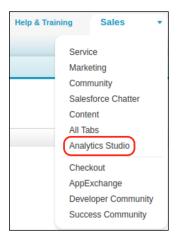
To access Analytics:

Use Analytics



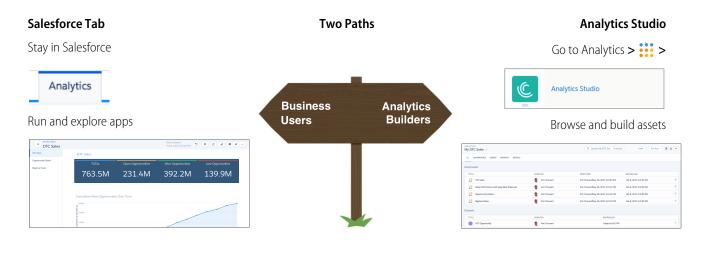
If you don't see the tab, your administrator sets it up like any new tab.





# Get Oriented on Your Analytics Home Page

With Analytics, you can take either a business user path or a builder path, depending on what you want to do, and you can switch paths at any time.



The business user path, generally for those with Use Analytics permission, leads to ready-to-explore dashboards and lenses in curated apps. For this path, work in the Analytics tab to run apps and collaborate with coworkers over dashboards.

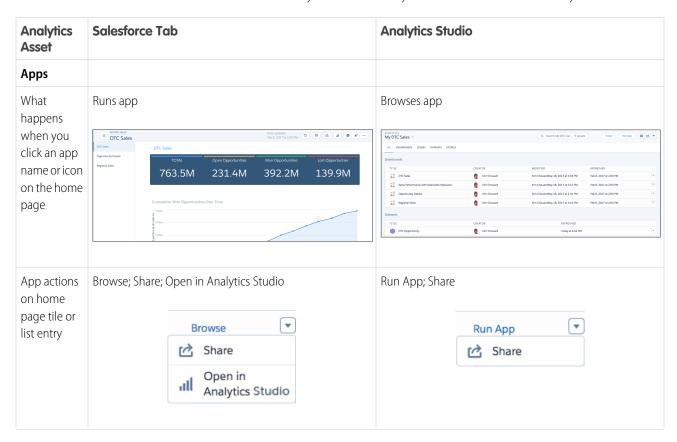
The builder path, generally for those with permission to create Analytics assets, leads to ready-to-explore datasets and ready-to-edit apps, dashboards, and lenses. For this path, work in the Analytics Studio to browse your assets and build new ones.

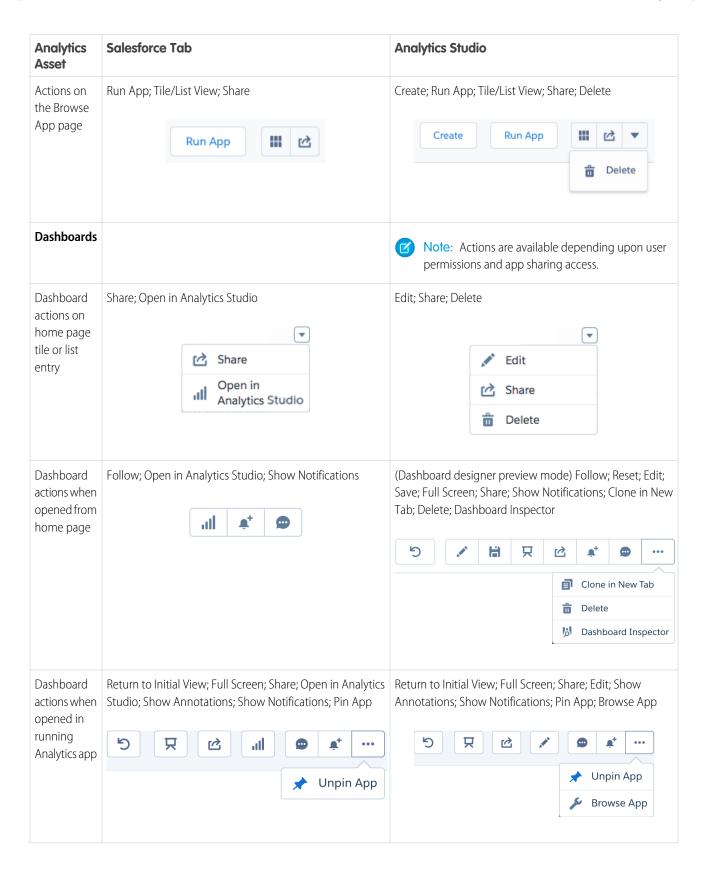
This table summarizes the differences between the Analytics tab in Salesforce and the Analytics Studio.

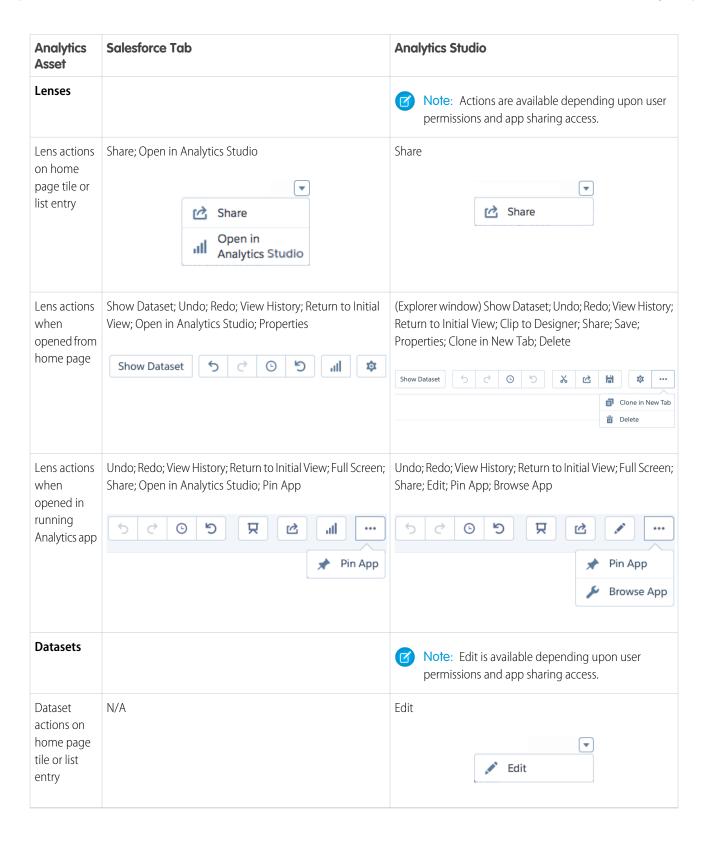
| Action | Salesforce Tab<br>(Run and Collaborate) | Analytics Studio<br>(Browse and Build) |
|--------|---|--|
| Create |   | <u>~</u>                               |

| Action           | Salesforce Tab<br>(Run and Collaborate) | Analytics Studio<br>(Browse and Build) |
|------------------|---|--|
| Annotate         | <u>~</u>                                | <u>~</u>                               |
| Set Notification | <b>~</b>                                | <b>~</b>                               |
| Pin Apps         | <b>~</b>                                | <b>~</b>                               |
| Edit             |   | <b>~</b>                               |
| Full Screen      | <b>~</b>                                | <b>~</b>                               |
| Clip to Designer |   | <b>~</b>                               |
| Clone in New Tab |   | <b>✓</b>                               |
| Save             |   | <b>~</b>                               |
| Share            | <b>~</b>                                | <b>~</b>                               |
| Delete           |   | <b>~</b>                               |

This table details the differences in behavior and functionality between the Analytics tab in Salesforce and the Analytics Studio.







#### IN THIS SECTION:

#### Find Your Analytics Assets

Your Analytics home page provides easy access to apps, dashboards, and lenses, and a variety of filter and search options help you find those Analytics assets fast.

#### Run Apps

Analytics apps are where you run dashboards and lenses.

#### Pin Apps to Your Analytics Home

Set up your Analytics home by pinning apps that will help you quickly locate and run your favorite, often-used assets.

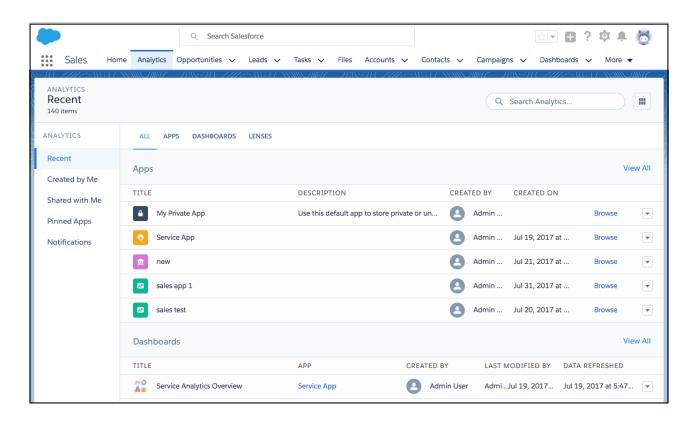
#### Track Notifications

Quickly monitor important changes in your data by tracking the status of your notifications.

# Find Your Analytics Assets

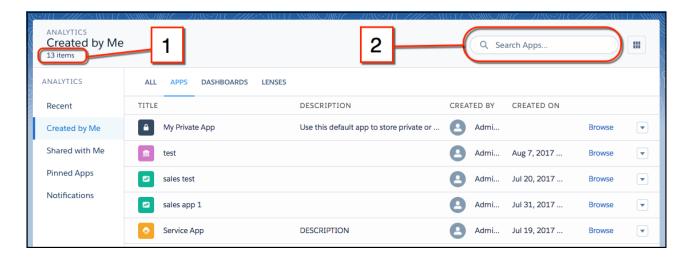
Your Analytics home page provides easy access to apps, dashboards, and lenses, and a variety of filter and search options help you find those Analytics assets fast.

Lists of Analytics assets are arranged in most recently used order. Click the list view icon ( ) to view assets with their descriptions and additional information. Click the tile view icon ( ) to view tiles with thumbnail images of dashboards and lenses.

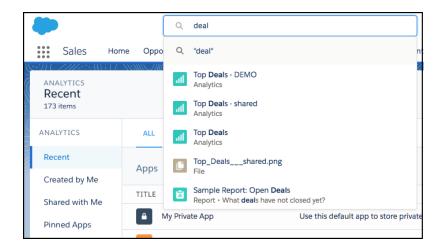


All views, whether tiles or list, include one-click access to both run and browse actions, as well as other actions if appropriate for the asset. Relevant timestamps are provided, depending on the asset. For lenses and dashboards, Data Refreshed is the last time the asset's dataset was updated. If a dashboard contains components that reference more than one dataset, the Data Refreshed timestamp will reflect the most recently updated dataset.

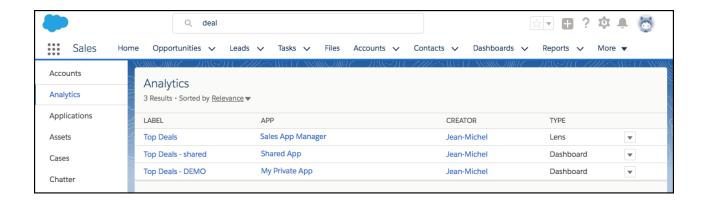
Filter using **Created by Me** and **Shared with Me**, as well as the **Apps**, **Dashboards**, and **Lenses** subtabs (and the **Datasets** subtab in Analytics Studio). The count of items reflects the filters you selected (1), and the search box searches only filtered items (2).



If you're working in Lightning Experience, you can use the global search box to quickly find and view lenses and dashboards. The search box dropdown list includes Analytics assets among its suggestions. Selecting an asset from the list runs it in the Analytics tab.



Or start typing and press Enter to see a page of found resources. To narrow the search results to only Analytics lenses and dashboards, click **Analytics** in the left panel. From the results, you can click to run either the asset or its app.



# **Run Apps**

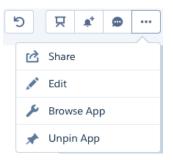
Analytics apps are where you run dashboards and lenses.

In the Analytics tab, click an app to run it. In Analytics Studio, click **Run App**. Running an app opens it in presentation mode, displaying the first dashboard or lens on your navigation list.

To open the navigation panel, click the navigation icon ( ). The panel lists the available dashboards and lenses. Click the icon again to close the panel.

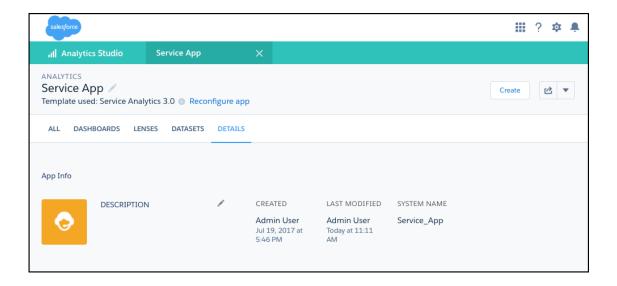
When the navigation panel is open, click any asset in the list. Dashboards and lenses let you explore live, interactive views of your data. When you want to return the asset to its initial state, click the Reset icon (5).

In addition, from the running app you can:



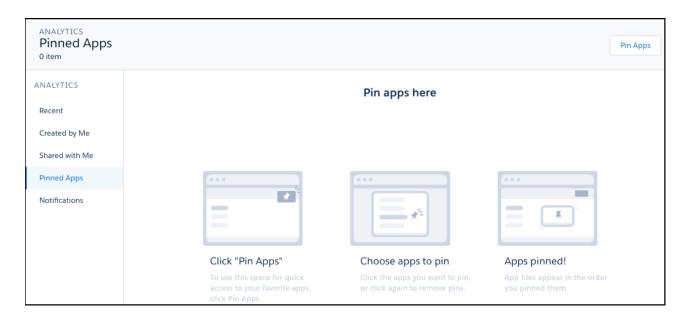
- Present full screen
- Set and manage notifications
- Annotate dashboard widgets
- Share
- View exploration history
- Open dashboards in the dashboard designer in order to edit them on page 431 (if you have permission and access)
- Pin the app to the home page (if you have permission and access).
- Browse the contents of the app to see its assets. The app browse page has the **Details** subtab. In addition to viewing app details, the Details tab is where you can add a description for the app and change its icon.

Analytics Get Started Using Analytics

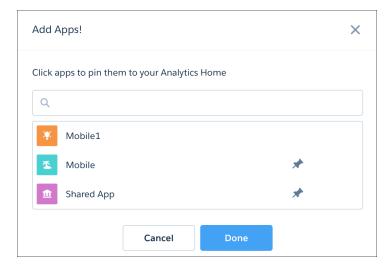


# Pin Apps to Your Analytics Home

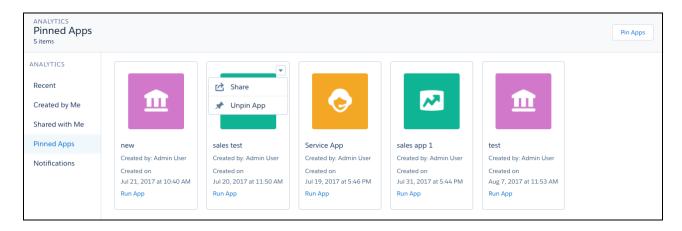
Set up your Analytics home by pinning apps that will help you quickly locate and run your favorite, often-used assets. Click the **Pinned Apps** filter on the left of your Analytics home.



Click **Pin Apps** in the upper right to select the apps that you want to access regularly. Or to unpin an app, click it again to remove the pin.



Apps appear on your Analytics home in the order that you pinned them.

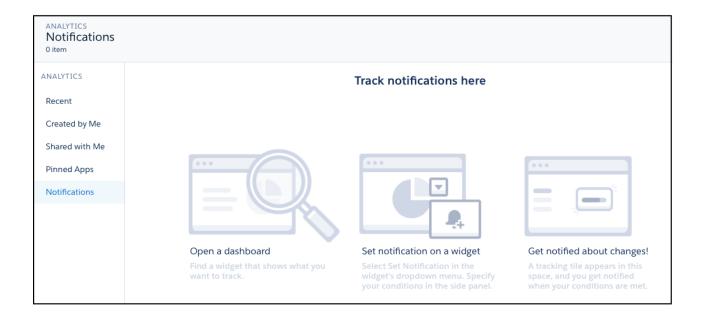


Note: If you don't have any apps yet, go to Create an App.

#### **Track Notifications**

Quickly monitor important changes in your data by tracking the status of your notifications.

Click the **Notifications** filter on the left of your Analytics home.



If you don't have any notifications yet, navigate to a dashboard with a number or chart you'd like to follow. Dashboard widgets are where you set notifications. Hover over the upper right corner of the widget, locate the dropdown action list, and select **Set Notification**. For more information, see Set Smart Notifications for Your Most Important Business Metrics.

You can set active notifications to appear on your Analytics home page. The notifications tracking gauges and bar charts are designed to show the progress toward the conditions set in your notification.



# View, Collaborate, and Take Action from Analytics

View conversational explorations of your data, and personalize your Analytics experience with saved dashboard views. Collaborate with features such as notifications, annotations, presentation mode, and downloading filtered data from Analytics. Use custom menus in lenses and dashboards to take action in Salesforce directly from Analytics.

#### IN THIS SECTION:

#### Converse with Your Data (Beta)

Ask data questions using non-technical language, and view answers in automatically configured charts. Start with a common word or two, and Analytics provides relevant suggestions that you can accept or edit.

#### Save Your Filtered View of a Dashboard

No need to reselect the filters every time you open a dashboard because you don't have permission to save the selections permanently. Change the filters and save your own view. Only you can see your views—other users still see the original dashboards.

#### Set Smart Notifications for Your Most Important Business Metrics

With notifications, Analytics works for you, when and where you choose. Attach notification criteria to widgets in dashboards, and select when to run the queries. You can see notifications in Analytics, Lightning Experience, Analytics for iOS, and email.

#### Collaborate with Dashboard Annotations

Annotate dashboard widgets with comments posted in the dashboard and in Chatter. With annotations, you can hold conversations about your data and how it's visualized, with the dashboard right there for reference.

#### Present Live, Interactive Dashboards

Conduct meetings directly from Analytics by presenting dashboards in running apps. With dashboards instead of slides with static images, you have real-time access to your data, and you can showcase dynamic visualizations.

#### Share Dashboards and Lenses

Share a dashboard or lens with your colleagues by posting to Chatter, or by getting its unique URL. A Chatter post provides an image and a link to the asset in Analytics. Colleagues with the link and access to the asset can drill in and explore the information that's presented.

#### Create PDF Files and Print Your Dashboards

Dashboards are browser print-friendly, and you can print or save PDF files of dashboards.

#### Download Images and Filtered Data

Download filtered data from lens explorations and dashboard widgets. Download formats include image (.png), Microsoft® Excel® (.xls), and comma-separated values (.csv) files. This feature downloads the results of a displayed query (or step).

#### Take Control of Your Salesforce Experience with Analytics Custom Actions Menus

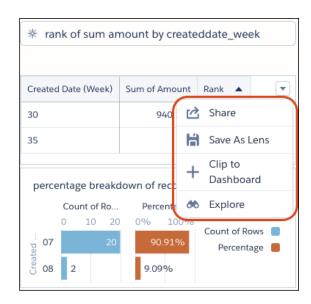
Analytics custom actions menus in charts and tables let you take advantage of Salesforce actions—such as posting to Chatter, creating an event or opportunity, or updating a record—and go directly to Salesforce records.

#### Converse with Your Data (Beta)

Ask data questions using non-technical language, and view answers in automatically configured charts. Start with a common word or two, and Analytics provides relevant suggestions that you can accept or edit.

To start a conversation:

- 1. For a dashboard, click \*\* to open the conversations panel. (For a lens, the conversations text entry box is always open.)
- 2. Click in the text entry box.
- **3.** Select a suggestion, or type your own question.
- **4.** (Optional) When you have the chart that answers your question, click an action icon or the dropdown menu in the upper right corner. Available actions, such as clip, explore, save, and share, depend on the context.



**How does it work?** The conversational auto-suggestions are based on fields in the available datasets. To see which datasets are open for conversational exploration, look for the purple hexagons ( ). For a lens, click **Fields** to view the available fields to ask about. For a dashboard, if the suggestions don't include the words you expect, click **Add Dataset** to expand your exploration.

**What kinds of questions can you ask?** Question are built with measures and dimensions from your data combined with keywords, such as "show me" and "by." Typically, measures are aggregated and dimensions are grouped to show meaningful information. Filters are applied to narrow the focus of the question.

#### **Example Conversational Queries**

| Aggregations and Limits | Measures                     | Dimensions                 | Filters  |
|-------------------------|------------------------------|----------------------------|--|
| top 3                   |                              | account owner              |  |
| average                 | CSAT                         |                            | this week (Created Date)   |
| bottom 5                | amount                       | by account owner and stage | for closed equals (true)   |
|                         | unit price and shipping cost | by product family          | between 10000 and 100000   |
|                         |                              | show me industry           |  |
|                         |                              | agent and case origin      |  |
| percentage change       |                              | by segment                 | previous cy (Close Date)   |
|                         | revenue, csat                | by agent, state, product   |  |
| percentage breakdown of | amount                       | by opportunity name        |  |
| rank                    | number of records            | by industry                | for industry equals (Agriculture,<br>Biotechnology,<br>Communications) |
| max                     | number                       |                            | for account type contains (cust) and amount > 10000                    |

What if my question doesn't include a measure? When no measure is specified, the response is aggregated by count of rows.

**What if I don't get a chart?** Sometimes your question isn't phrased properly and you see a red error message. In that case, try using the auto-suggestions to help rephrase your question. Sometimes you've asked a valid question but no results are returned. Try a wider filter or a different group. For more about what to type, see the following tables.

# **Elements of Conversational Exploration**

| Question Elements                     | Keywords and Symbols  |
|---------------------------------------|---|
| Measures (numerical or aggregated)    | count, number, sum, avg, max, min, median, first, last, unique, top, bottom, stddev, stddevp, var, varp, percentage breakdown, percentage change, rank  |
| Groups                                | by, and   |
| Filters                               | (By <b>dimension</b> values) for, in/equals, not in/not equals, contains, top, bottom, without, filter out, exclude (for multiple values, use commas and parentheses, for example "(v1, v2, v3)") |
|                                       | (By <b>measure</b> ranges) with, equal, =, greater than, >, less than, <, between, top, bottom  |
|                                       | (By relative <b>date</b> ranges) today, tomorrow, yesterday, current/next/previous/last, year, quarter, month, week, day (for full list, see Relative Date Filters)                               |
| Question words                        | show me, show the, what is, what are  |
| Shortcuts that depend on your dataset | deal, lead conversion, time to close, win rate (for more information, see Shortcuts)  |

#### **Relative Date Filters**

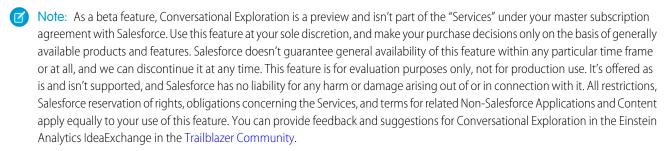
| Relative date units | Keywords   |
|---------------------|--|
| Fiscal Year         | Current FY, Previous FY, Previous 2 FY, 2 FY Ago, Next FY, Current and Previous FY, Current and Previous 2 FY, Current and Next FY |
| Fiscal Quarter      | Current FQ, Current and Next FQ, Current and Previous FQ, Next FQ, Previous FQ, Current and Next 3 FQ                              |
| Calendar Year       | Current CY, Previous CY, Previous 2 CY, 2 CY Ago, Next CY, Current and Previous CY, Current and Previous 2 CY, Current and Next CY |
| Calendar Quarter    | Current CQ, Current and Next CQ, Current and Previous CQ, Next CQ, Previous CQ, Current and Next 3 CQ                              |
| Calendar Month      | Last Month, This Month, Next Month, Current and Previous Month, Current and Next Month   |
| Calendar Week       | Last Week, This Week, Next Week  |

| Relative date units | Keywords   |  |
|---------------------|--|--|
| Day                 | Yesterday, Today, Tomorrow, Last 7 Days, Last 30 Days, Last 60 Days, Last 90 Days, Last 120 Days, Next 7 Days, Next 30 Days, Next 60 Days, Next 90 Days, Next 120 Days |  |

#### **Shortcuts**

| Keywords                    | Functions  | Requirements  | Examples   |
|-----------------------------|--|---|--|
| deals                       | sum Amount by opportunity<br>Name                          | Opportunities dataset that includes "name" dimension and "amount" measure | "top 10 deals last month" or<br>"show me deals that have<br>moved out this quarter<br>(createdDate)" |
| lead conversion rate        | total leads divided by converted lead ("isConverted"=true) | Leads dataset that includes "IsConverted" dimension                       | "lead conversion rate by rep last<br>month (Created Date)"   |
| closed, won, lost (filters) | "isClosed"=true; "isWon"=true;<br>"isWon"=false            | Opportunities dataset that includes "isClosed" and "isWon"                | "amount won last month (Close Date)"   |





Take the following into consideration.

- Conversational exploration requires the Analytics Platform permission set license. It isn't available in embedded dashboards, mobile
  apps, Analytics for Communities, or standalone Analytics apps, such as the Sales Analytics app.
- Admin setup is required.
- Conversational exploration is available only in the dashboard designer, the explorer, and running apps.
- Some advanced functions aren't supported.

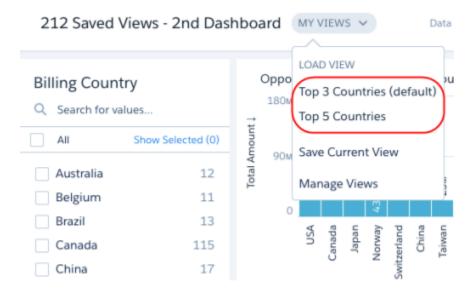
#### SEE ALSO:

Enable Conversational Exploration (Beta) Explore and Visualize Your Data

### Save Your Filtered View of a Dashboard

No need to reselect the filters every time you open a dashboard because you don't have permission to save the selections permanently. Change the filters and save your own view. Only you can see your views—other users still see the original dashboards.

You can create up to 10 views per dashboard and choose one as the default that shows when you open the dashboard. All your saved views are listed in the view menu.



- 1. To create a view, open the dashboard in view mode, make your selections, and click **Save View**.
  - The view includes all selections that you made in list, toggle, range, date, chart, compare table, and global filter widgets.
  - Note: In the Einstein Analytics mobile app, you can't manage or create views, but otherwise, views are fully supported.
- **2.** To remove your changes to a dashboard or view, including selections, click 5.

When you open a view and change a selection, an asterisk appears next to the view name to indicate that it's been modified. When you change a selection while viewing a dashboard without a view, Modified appears. In either case, you can save the current selections as a new view or overwrite an existing one.

- 3. To remove the view applied to a dashboard so you can view the original dashboard, click **Clear View** in the view menu.
- **4.** To set your default view or delete a view, click **Manage Views**.
- 5. To share your view with others, open the view and select **Share** > **Get URL**.

  When users open the link, they see your view of the dashboard. If they want, they can save it as one of their own views.

#### IN THIS SECTION:

#### Considerations When Opening a Dashboard View

There are special cases when a view doesn't open or not applied completely.

#### Considerations When Opening a Dashboard View

There are special cases when a view doesn't open or not applied completely.

If you open a dashboard that has external selections or filters, the default view isn't applied. If you open a view, the external selections and filters are removed. If steps or widgets in your dashboard have errors, views might not be applied properly.

If you open a view and Analytics can't display all the criteria defined in a view, it displays what it can and shows a warning next to the view name.



Analytics can't display all view criteria for the following cases.

- Analytics ignores selections and filters that no longer apply to the dashboard. For example, Analytics ignores references to datasets, fields, field values, and steps that no longer exist. These issues arise when the dashboard or data changes but the view isn't updated.
- If a view includes a selection on a widget that doesn't exist in a layout, Analytics ignores the selection. A view applies to all layouts defined in the dashboard.
- If a view is created based on a dashboard page that has since been deleted, Analytics shows the view based on the first page defined for the dashboard.

# Set Smart Notifications for Your Most Important Business Metrics

With notifications, Analytics works for you, when and where you choose. Attach notification criteria to widgets in dashboards, and select when to run the queries. You can see notifications in Analytics, Lightning Experience, Analytics for iOS, and email.

To set up an Analytics notification, follow these steps.

- 1. Locate a dashboard widget that shows information you want to be notified about. You can set notifications on any chart except timeline or values table. Optionally, you can use the dashboard's selectors to create a more personalized query of your data.
- 2. Select **Set Notification** from the widget's dropdown list.

#### **EDITIONS**

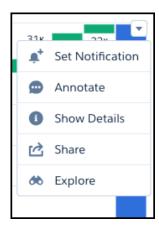
Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

#### **USER PERMISSIONS**

To set notifications on Analytics dashboard widgets:

Use AnalyticsRun Reports

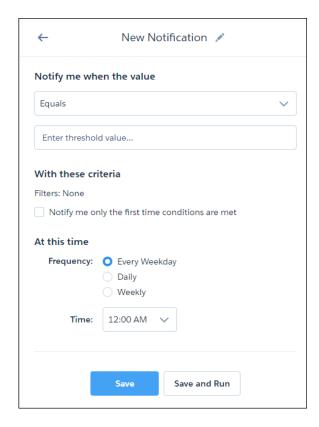


- **3.** In the New Notification panel, enter a name for your notification.
- **4.** Set the value that you want to know about as soon as your widget query returns it. Depending on the chart, the panel provides relevant options to select for creating a notification. You can include up to four groupings. If the chart has multiple measures, select the one you want from the list of options.

For example, say that you want to know when your team has reached 75% of quota. You'd click **Set Notification** on the Quota Attainment number widget. In the New Notification panel, you'd select **Equals or is greater than** from the drop-down list and enter 75 for the threshold value.

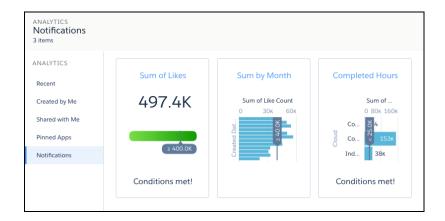
Notifications read roughly like a sentence. For example, "Notify me when any channel's sum of open cases is less than 20" or "Notify me when any product or reason count of cases is greater than 20."

**5.** Select the frequency and time when you want the query to run.



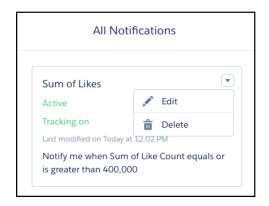
**6.** Test your notification on the spot with **Save and Run**, or simply click **Save**.

A tracking tile appears in the Notifications section of your Analytics home page.



When the conditions you've set for the notification are met, you get the message on the tile. You're also notified via email, and in Analytics and Lightning Experience, the bell icon ( a) alerts you with a number in red.

In Analytics, the dropdown list from the bell includes the option to open the Manage Analytics Notifications dialog box. You can also manage notifications on the dashboard. The bell icon with the plus (\*\*) opens the All Notifications panel and shows numbers in blue (\*\*) on widgets that have notifications. In the All Notifications panel, each notification has a dropdown action list for editing and deleting the notification.



Clicking the link in a notification email, the notification manager, or a tile in the Notifications section on your Analytics home page, takes you to the dashboard view relevant for the notification. You immediately see the dashboard page with your filters and selections, and with the notification set up in the side panel. If you want to make any changes, click the **Edit** button. In edit mode, you can also activate or deactivate the notification, and select whether to show the tracking tile on the Analytics home page.

Take note of these considerations for Analytics notifications.

- You can set up to five notifications per user.
- Notifications aren't available in embedded dashboards and dashboards designed in the classic designer.
- Notification tracking is available in the Analytics app for iOS, but it isn't available in the Analytics app for Android or in the Salesforce mobile app.

- Notification tracking tiles use flat gauge or bar chart visualizations to show progress toward the conditions set in the notifications. The tiles are separate from the dashboard and don't use the dashboard's chart types and widget properties.
- Notifications are available on all widgets except timeline charts and values tables.
- For queries with groupings, all results are evaluated for the notification criteria, not just the first row.
- Notifications set on steps that are based on results bindings aren't supported, including dynamic widget titles.

#### Collaborate with Dashboard Annotations

Annotate dashboard widgets with comments posted in the dashboard and in Chatter. With annotations, you can hold conversations about your data and how it's visualized, with the dashboard right there for reference.



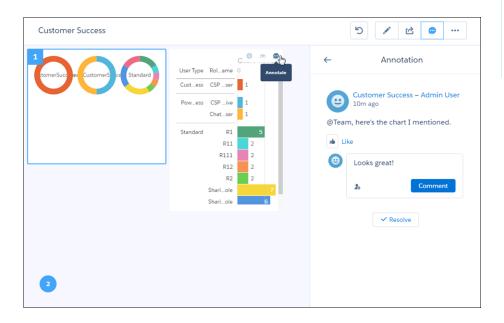
**Note**: Annotations aren't supported in dashboards built using the classic designer.

To create annotations, select Annotate from the drop-down list on a widget, or click the speech

bubble icon ( ) in the dashboard control bar. Widgets with annotations show a blue square with the number of open annotations.

Analytics saves both open and resolved annotations. And if you delete a widget, its open annotations are saved as detached annotations. You can access detached annotations from the blue circle at the bottom of the dashboard.

Click an annotation in a blue square or circle to open it for comments.



# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

#### **USER PERMISSIONS**

To annotate Analytics dashboard widgets:

Use Analytics

Although you can @mention anyone in your org, the security you have set up controls access to the dashboard.

Analytics dashboard annotations are natively integrated with Chatter, and comments on dashboards also appear as Chatter posts. The

Annotation panel includes the option to post a screenshot of the current state of the dashboard.

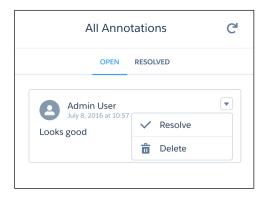


Clicking the link included in your Chatter post opens the dashboard view just as it was set up at the time you posted. In addition, the annotations panel opens with the relevant Chatter feed. When colleagues click the link in your annotation, they'll see the dashboard page with all of your filters and selections applied, and they can easily respond in the annotations panel.

On an open annotation, you can refresh the feed or close the annotation.



In the dashboard panel, each annotation has a drop-down action list for resolving or deleting the annotation.



You receive all posts on a dashboard if you click its + Follow button. When you see annotations in Chatter, click the dashboard image to navigate directly to the annotation on the dashboard in Analytics.

SEE ALSO:

**Enable Annotations on Dashboard Widgets** 

#### Present Live, Interactive Dashboards

SHARED APP

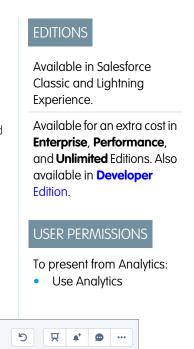
New dashboard

Ξ

Conduct meetings directly from Analytics by presenting dashboards in running apps. With dashboards instead of slides with static images, you have real-time access to your data, and you can showcase dynamic visualizations.

Start a presentation by clicking the Full Screen icon (  $\mathbb{R}$  ) in the control bar of a running app or dashboard.

During the presentation, you can use all the Analytics functionality, such as filtering, faceting, and exploring lenses. In addition, the presentation has a control bar.



You can share, download, set notifications, and collaborate in a dashboard's feed with annotations.

To move to another dashboard or lens, click ito open the navigation panel and select the next asset to present. Click again to close the navigation panel.

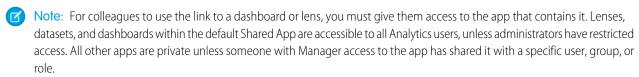
## Share Dashboards and Lenses

Share a dashboard or lens with your colleagues by posting to Chatter, or by getting its unique URL. A Chatter post provides an image and a link to the asset in Analytics. Colleagues with the link and access to the asset can drill in and explore the information that's presented.

1. Click Share.



- 2. Click the tab for the sharing method that you want. **Post to Feed** posts an image and link in Chatter. **Get URL** provides a unique URL to the asset.
  - **a.** If you're posting to Chatter, select **User** or **Group** feed, enter the name, and then type your comment. You can also remove the image from your post by hovering over it and clicking the **X**. Note that posted images are public.
  - **b.** If you're getting the unique URL, copy the link, and then paste it wherever you want to share it.
  - Tip: Dashboard links shared from Analytics Studio can include views with selections and filters applied. To generate a URL with page and view specifications, either use **Get URL** or remove the image from **Post to Feed** by hovering over the image and clicking the **X**.
- **3.** If applicable, click **Give Access** to set the level of sharing access.
- 4. Click Done.



# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

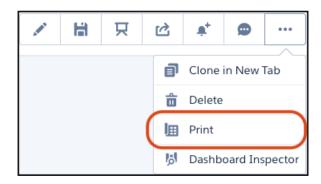
To view visualizations:

Use Analytics

## Create PDF Files and Print Your Dashboards

Dashboards are browser print-friendly, and you can print or save PDF files of dashboards. Printing is available in the dashboard preview mode in Analytics Studio.

1. Click to open the menu, and select **Print**.



A snapshot of your dashboard opens.

- 2. In your browser's File menu, select Print and set the destination to your printer or Save as PDF.
- 3. (Optional) To include background color or images, click More settings and select Background graphics.
- **4.** When you're finished printing, click **Done**.

When printing a dashboard, consider the following.

- Printing is supported in Chrome browsers only.
- The Print action is not included with embedded dashboards.
- The print is a snapshot of the dashboard with your current filters and selections. If a widget is scrollable, only the current view of the widget prints. If the dashboard has multiple pages, only the currently open page prints.
- Colors and page orientation are based on your print settings.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To print Analytics dashboards:

Use Analytics

# Download Images and Filtered Data

Download filtered data from lens explorations and dashboard widgets. Download formats include image (.png), Microsoft Excel (.xls), and comma-separated values (.csv) files. This feature downloads the results of a displayed query (or step).

Select **Share** from the dropdown menu on a dashboard widget, or from a lens, click the **Share** icon. In the Share dialog, select **Download**.

# **EDITIONS**

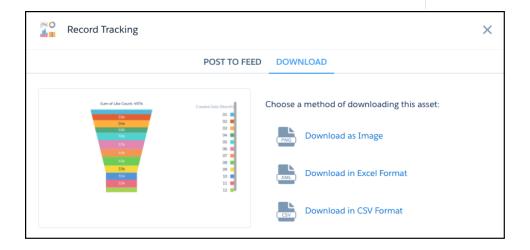
Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To download screenshots and data in tabular format through the Analytics user interface:

 Download Analytics Data



When downloading filtered data, the number of rows is limited by the query. The default limit per query is 10,000 rows of data. To set a different value, use the SAQL limit statement.

SEE ALSO:

**Enable Downloading from Analytics** 

# Take Control of Your Salesforce Experience with Analytics Custom Actions Menus

Analytics custom actions menus in charts and tables let you take advantage of Salesforce actions—such as posting to Chatter, creating an event or opportunity, or updating a record—and go directly to Salesforce records.

With custom actions menus, you can use quick actions that have been added to Salesforce objects—directly from Analytics dashboards and lenses. You can also open records from Salesforce or elsewhere on the Web through the menus.

# EDITIONS

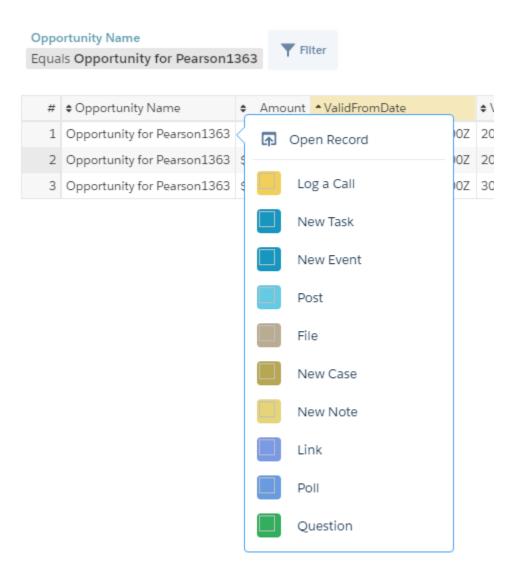
Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

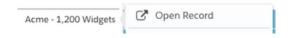
To use custom actions menus:

"Use Analytics"



You can access actions menus from the following parts of charts and tables in Analytics:

• Value labels on charts (such as "Opportunity for Pearson" in the image above).



Legend value labels in table cells.



• Values in table cells.



Hover over the labels to see if an actions menu is available. Click the value, cell, or legend to see the menu's contents, and then select an action or open a record.

To learn more, see Add Actions to Analytics Lenses and Dashboards

# **Analytics Glossary**

Familiarize yourself with common Analytics terminology.

### App

**Analytics** 

An *app* contains dashboards, lenses, and datasets in any combination that makes sense for sharing your data analyses with colleagues. Apps are like folders. They allow users to organize their data projects—private and shared—and to control sharing.

#### Dashboard

A dashboard is a curated set of charts, metrics, and tables based on the data in one or more lenses.

#### **Dashboard JSON file**

A dashboard JSON file defines the components that a dashboard contains and describes how they're connected.

#### **Data monitor**

The *data monitor* tool allows you to monitor dataflow and system jobs. You can also use it to start, stop, reschedule, download, and upload dataflows.

#### **Dataflow**

A *dataflow* is a set of instructions that specifies what data to extract from Salesforce objects or datasets, how to transform the datasets, and which datasets to make available for querying.

#### **Dataflow definition file**

A dataflow definition file is a JSON file that contains transformations that represent the dataflow logic.

## **Dataflow job**

A dataflow job processes the logic in a dataflow.

#### Dataset

A dataset contains a set of source data, specially formatted and optimized for interactive exploration.

#### Dataset builder

The *dataset builder* is a point-and-click user interface that allows you to easily select and extract data from related Salesforce objects to create a single dataset.

#### Date

A date can be represented as a day, month, year, and, optionally, time. You can group, filter, and perform math on dates.

#### Designer

*Designer* is the interface where you create dashboards. There are two versions: dashboard designer (the new one) and classic designer (the legacy one).

#### **Dimension**

A dimension is a qualitative value, like region, product name, and model number. Dimensions are handy for grouping and filtering your data. Unlike measures, you can't perform math on dimensions.

#### **Explorer**

Explorer is the interface where you explore datasets and lenses.

#### Extended metadata (XMD)

Extended metadata (XMD) allows you to customize the formatting of many dashboard elements in Analytics.

#### **External data**

External data is data that resides outside of Salesforce, such as data from outside applications and spreadsheets.

#### **External Data API**

Use External Data API to upload external data files to Analytics to create datasets.

#### Lens

A lens is a particular view into a dataset's data. It's where you do exploratory analysis and visualization.

#### Measure

A *measure* is a quantitative value, like revenue and exchange rate. You can do math on measures, such as calculating the total revenue and minimum exchange rate.

#### Metadata file

A metadata file is a JSON file that describes the structure of an external data file.

#### **Predicate**

A predicate is a filter condition that defines row-level access to records in a dataset.

### Salesforce Analytics Query Language (SAQL)

Use SAQL to access and analyze data in Analytics datasets.

## Step

A *step* determines the results shown in a widget. Steps either get data dynamically or statically. For example, a step can query a dataset to get the average opportunity amount for each account, or it can retrieve an unchanging, user-defined value.

#### Transformation

A *transformation* refers to the manipulation of data. You can add transformations to a dataflow to extract data from Salesforce objects or datasets, transform datasets that contain Salesforce or external data, and register datasets.

## Unit symbol (for measures)

A *unit symbol* represents the unit of a shortened number that appears in a chart or number widget. Analytics uses the following symbols.

| Symbol | Unit                | Example                            |
|--------|---------------------|------------------------------------|
| K      | Thousand (10^3)     | 4K = 4,000                         |
| М      | Million (10^6)      | 4M = 4,000,000                     |
| В      | Billion (10^9)      | 4B = 4,000,000,000                 |
| Т      | Trillion (10^12)    | 4T = 4,000,000,000,000             |
| Р      | Quadrillion (10^15) | 4P = 4,000,000,000,000,000         |
| Χ      | Quintillion (10^18) | 4X= 4,000,000,000,000,000          |
| Z      | Sextillion (10^21)  | 4Z = 4,000,000,000,000,000,000     |
| Υ      | Septillion (10^24)  | 4Y = 4,000,000,000,000,000,000,000 |
| m      | Thousandth (10^-3)  | 4m = 0.004                         |
| μ      | Millionth (10^-6)   | $4\mu = 0.000004$                  |
| n      | Billionth (10^-9)   | 4n = 0.000000004                   |

| Symbol | Unit                   | Example                                   |
|--------|------------------------|---|
| р      | Trillionth (10^-12)    | 4p = 0.000000000004                       |
| f      | Quadrillionth (10^-15) | 4f = 0.000000000000004                    |
| a      | Quintillionth (10^-18) | 4a = 0.0000000000000000000000000000000000 |
| Z      | Sextillionth (10^-21)  | 4z = 0.0000000000000000000000000000000000 |
| у      | Septillionth (10^-24)  | 4y = 0.0000000000000000000000000000000000 |

#### Visualization

A visualization is commonly a chart or graph, such as a bar chart, donut chart, timeline, or heat map. It can also be data in tabular form, such as a comparison table or pivot table. Every visualization has an underlying query, which is how Analytics retrieves information from the source data.

# Learn Analytics with Trailhead

Trailhead is the fun and free way to learn Salesforce. Now you can get acquainted with Analytics through Trailhead, using a special Analytics-enabled Developer Edition org.

For the Analytics trails, you can't use an old Developer Edition org. You must sign up for the special Developer Edition that comes with a limited Analytics Platform license and contains sample data required for the Analytics trails.

You'll find the sign up for the special Developer Edition org in these trails:

- Explore with Analytics: http://trailhead.salesforce.com/trail/wave\_analytics\_explorer
- Build and Administer Analytics: https://trailhead.salesforce.com/trails/wave\_analytics\_enable\_and\_produce
- Accelerating Analytics with Apps: http://trailhead.salesforce.com/trail/wave\_analytics\_apps
- Gain Insight with Einstein Discovery: https://trailhead.salesforce.com/trails/wave\_analytics\_einstein\_discovery

## SEE ALSO:

Analytics Limits
Analytics Limits

# Access Insights from the Analytics Mobile App

Analytics on mobile gives you a fast, fluid way to discover the compelling insights within your data and to share the right visuals wherever you are. This page has resources for Analytics for Android and iOS.

#### IN THIS SECTION:

#### **Analytics Mobile Features**

Analytics is available as a downloadable app on iOS and Android devices. This table details supported Analytics features in the mobile apps.

#### Download the Analytics Mobile App

Click the link to go to the download site for the iOS or Android Analytics mobile app.

## Learn How to Use Analytics for iOS

Access your data anywhere with the Analytics for iOS mobile app. For the complete online help, go to Analytics for iOS. Get up and running with these online help pages.

## Learn How to Use Analytics for Android

Access your data anywhere with the Analytics for Android mobile app. For the complete online help, go to Analytics for Android. Get up and running with these online help pages.

## Set Up and Manage Analytics on Mobile

Optimize dashboard layouts for mobile devices, and administer Analytics for mobile.

## Limitations of Analytics on iPhone® and iPad®

Be aware of these mobile-specific limitations.

## Limitations of Analytics on Android Devices

Be aware of these mobile-specific limitations.

# **Analytics Mobile Features**

Analytics is available as a downloadable app on iOS and Android devices. This table details supported Analytics features in the mobile apps.

| Feature  | Analytics for iOS | <b>Analytics for Android</b> |
|--|-------------------|------------------------------|
| General  |                   |                              |
| Local playground                                 | ✓                 |                              |
| Filter list views (by asset)                     | ✓                 | ✓                            |
| Sort list views (alphabetic and MRU)             | ✓                 |                              |
| Search   | ✓                 | ✓                            |
| In-app navigation                                | ✓                 |                              |
| Access to app sharing controls                   |                   |                              |
| Pin apps   | ✓                 |                              |
| Favorite dashboards, lenses, datasets            | ✓                 |                              |
| Track notifications                              | ✓                 |                              |
| Custom bulk actions (via Visualforce)            |                   |                              |
| Wave REST API                                    | ✓                 | ✓                            |
| Support for Communities                          |                   |                              |
| Actions  |                   |                              |
| View asset information                           | ✓                 |                              |
| View, filter, and facet dashboards and lenses    | ✓                 | ✓                            |
| Drill in and get details from lenses and widgets | ✓                 | ✓                            |

| Explore datasets, lenses, and widgets  Create and edit dashboards  Save and delete lenses and dashboards  Create apps  Import data (from CSV, TSV, XLSX files)  Delete datasets and apps  Post images or links to Chatter  Copy link to dashboard or lens  Open Salesforce records directly from dashboards  Use external links to other sources  Open to asset from link in external app  Annotate dashboard widgets  Desalesforce actions from custom action menus  Access and share saved dashboard views  Apply aggregation functions on datasets  Apply groupings on datasets  Filter by measures, dimensions, and absolute or relative dates  View lenses using SAQL or SOQL step types  View lenses using Apex step types (beta)  Starts and Tables  Column  Stacked Gar  Stacked Column  Scatter Plot  Donut  Heat Map  Line  Line | Feature  | Analytics for iOS | Analytics for Android |
|--|--|-------------------|-----------------------|
| Save and delete lenses and dashboards  Create apps  Import data (from CSV, TSV, XLSX files)  Delete datasets and apps  Post images or links to Chatter  Copyl link to dashboard or lens  Open Salesforce records directly from dashboards  Use external links to other sources  Open to asset from link in external app  Annotate dashboard widgets  Do Salesforce actions from custom action menus  Access and share saved dashboard views  Exploration and Queries (Steps)  Apply aggregation functions on datasets  Apply aggregation functions on datasets  Filter by measures, dimensions, and absolute or relative dates  View lenses using Apex step types (beta)  Support for query results limits  Column  Column  Stacked Bar  Scatcked Column  Scatter Plot  Donut  Heat Map  | Explore datasets, lenses, and widgets                          | ✓                 |                       |
| Import data (from CSV, ISV, XLSX files)  Delete datasets and apps  Post images or links to Chatter  Copy link to dashboard or lens  Open Salesforce records directly from dashboards  Use external links to other sources  Open to asset from link in external app  Annotate dashboard widgets  Do Salesforce actions from custom action menus  Access and share saved dashboard views  Exploration and Queries (Steps)  Exploration and Queries (Steps)  Filter by measures, dimensions, and absolute or relative dates  View lenses using SAQL or SQQL step types  View lenses using Apex step types (beta)  Support for query results limits  Column  Column  Stacked Bar  Scatched Column  Scatter Plot  Donut  Heat Map   | Create and edit dashboards                                     |                   |                       |
| Inport data (from CSV, TSV, XLSX files)  Delete datasets and apps  Post images or links to Chatter  Copy link to dashboard or lens  Open Salesforce records directly from dashboards  Use external links to other sources  Open to asset from link in external app  Annotate dashboard widgets  Do Salesforce actions from custom action menus  Access and share saved dashboard views  Exploration and Queries (Steps)  Apply aggregation functions on datasets  Apply groupings on datasets  Filter by measures, dimensions, and absolute or relative dates  View lenses using SAQL or SOQL step types  View lenses using Apex step types (beta)  Support for query results limits  Column  Column  Stacked Bar  Column  Scatter Plot  Donut  Heat Map   | Save and delete lenses and dashboards                          | ✓                 |                       |
| Delete datasets and apps  Post images or links to Chatter  Copyl link to dashboard or lens  Open Salesforce records directly from dashboards  Use external links to other sources  Open to asset from link in external app  Annotate dashboard widgets  Do Salesforce actions from custom action menus  Access and share saved dashboard views  Exploration and Queries (Steps)  Apply aggregation functions on datasets  Apply groupings on datasets  Filter by measures, dimensions, and absolute or relative dates  View lenses using Apex step types (beta)  Support for query results limits  Charts and Tables  Column  Stacked Bar  Stacked Column  Scatter Plot  Donut  Heat Map   | Create apps  |                   |                       |
| Post images or links to Chatter  Copyl link to dashboard or lens  Open Salesforce records directly from dashboards  Use external links to other sources  Open to asset from link in external app  Annotate dashboard widgets  Do Salesforce actions from custom action menus  Access and share saved dashboard views  Exploration and Queries (Steps)  Apply aggregation functions on datasets  Apply aggregation functions on datasets  Apply measures, dimensions, and absolute or relative dates  View lenses using SAQL or SOQL step types  View lenses using Apex step types (beta)  Support for query results limits  Charts and Tables  Column  Stacked Bar  Stacked Column  Scatter Plot  Donut  Heat Map  | Import data (from CSV, TSV, XLSX files)                        | ✓                 |                       |
| Copy link to dashboard or lens Open Salesforce records directly from dashboards Use external links to other sources Open to asset from link in external app Annotate dashboard widgets Do Salesforce actions from custom action menus Access and share saved dashboard views  Exploration and Queries (Steps)  Apply aggregation functions on datasets Apply groupings on datasets Filter by measures, dimensions, and absolute or relative dates View lenses using SAQL or SOQL step types View lenses using Apex step types (beta)  Support for query results limits Column Stacked Bar Stacked Column Scatter Plot Donut Heat Map   | Delete datasets and apps                                       |                   |                       |
| Open Salesforce records directly from dashboards .   Use external links to other sources .   Open to asset from link in external app .   Annotate dashboard widgets .   Do Salesforce actions from custom action menus .   Access and share saved dashboard views .   Exploration and Queries (Steps) .   Apply aggregation functions on datasets .   Apply groupings on datasets .   Filter by measures, dimensions, and absolute or relative dates .   View lenses using SAQL or SOQL step types .   View lenses using Apex step types (beta)   Support for query results limits .   Column .   Stacked Bar .   Stacked Column .   Scatter Plot .   Donut .   Heat Map .   | Post images or links to Chatter                                | ✓                 | ✓                     |
| Use external links to other sources Open to asset from link in external app Annotate dashboard widgets Do Salesforce actions from custom action menus Access and share saved dashboard views Exploration and Queries (Steps) Apply aggregation functions on datasets Apply groupings on datasets Filter by measures, dimensions, and absolute or relative dates View lenses using SAQL or SOQL step types View lenses using Apex step types (beta)  Charts and Tables Bar Column Column Stacked Bar Stacked Column Scatter Plot Donut Heat Map   | Copy link to dashboard or lens                                 | ✓                 | ✓                     |
| Open to asset from link in external app  Annotate dashboard widgets  Do Salesforce actions from custom action menus  Access and share saved dashboard views  Exploration and Queries (Steps)  Apply aggregation functions on datasets  Apply groupings on datasets  Filter by measures, dimensions, and absolute or relative dates  View lenses using SAQL or SQQL step types  View lenses using Apex step types (beta)  Charts and Tables  Bar  Column  Column  Stacked Bar  Stacked Column  Stacked Column  Scatter Plot  Donut  Heat Map  | Open Salesforce records directly from dashboards               | ✓                 | ✓                     |
| Annotate dashboard widgets  Do Salesforce actions from custom action menus  Access and share saved dashboard views   | Use external links to other sources                            | ✓                 | ✓                     |
| Do Salesforce actions from custom action menus  Access and share saved dashboard views  Exploration and Queries (Steps)  Apply aggregation functions on datasets  Apply aggregation functions on datasets  Filter by measures, dimensions, and absolute or relative dates  View lenses using SAQL or SOQL step types  View lenses using Apex step types (beta)  Support for query results limits  Charts and Tables  Bar  Column  Stacked Bar  Stacked Column  Stacked Column  Count  Heat Map   | Open to asset from link in external app                        | ✓                 |                       |
| Access and share saved dashboard views  Exploration and Queries (Steps)  Apply aggregation functions on datasets  Apply groupings on datasets  Filter by measures, dimensions, and absolute or relative dates  View lenses using SAQL or SOQL step types  View lenses using Apex step types (beta)  Support for query results limits  Charts and Tables  Bar  Column  Stacked Bar  Stacked Column  Stacked Column  Stacked Flot  Donut  Heat Map   | Annotate dashboard widgets                                     |                   |                       |
| Exploration and Queries (Steps)  Apply aggregation functions on datasets  Apply groupings on datasets  Filter by measures, dimensions, and absolute or relative dates  View lenses using SAQL or SOQL step types  View lenses using Apex step types (beta)  Support for query results limits  Charts and Tables  Bar  Column  Column  Stacked Bar  Stacked Sar  Stacked Column  Stacked Flot  Donut  Heat Map  | Do Salesforce actions from custom action menus                 |                   |                       |
| Apply aggregation functions on datasets  Apply groupings on datasets  Filter by measures, dimensions, and absolute or relative dates  View lenses using SAQL or SOQL step types  View lenses using Apex step types (beta)  Support for query results limits  Charts and Tables  Bar  Column  Stacked Bar  Stacked Bar  Stacked Column  Scatter Plot  Donut  Heat Map   | Access and share saved dashboard views                         | ✓                 | ✓                     |
| Apply groupings on datasets  Filter by measures, dimensions, and absolute or relative dates  View lenses using SAQL or SQQL step types  View lenses using Apex step types (beta)  Charts and Tables  Bar  Column  Stacked Bar  Stacked Bar  Stacked Polumn  Scatter Plot  Donut  Heat Map  | Exploration and Queries (Steps)                                |                   |                       |
| Filter by measures, dimensions, and absolute or relative dates  View lenses using SAQL or SOQL step types  View lenses using Apex step types (beta)  Support for query results limits  Charts and Tables  Bar  Column  Stacked Bar  Stacked Bar  Stacked Flot  Donut  Heat Map   | Apply aggregation functions on datasets                        | ✓                 |                       |
| View lenses using SAQL or SOQL step types • •   View lenses using Apex step types (beta) • •   Support for query results limits • •   Charts and Tables • •   Bar • •   Column • •   Stacked Bar • •   Stacked Column • •   Scatter Plot • •   Donut • •   Heat Map • •  | Apply groupings on datasets                                    | ✓                 |                       |
| View lenses using Apex step types (beta)   Support for query results limits Image: Charts and Tables   Bar Image: Column   Column Image: Column   Stacked Bar Image: Column   Stacked Column Image: Column   Scatter Plot Image: Column   Donut Image: Column   Heat Map Image: Column   Image: Column in the property of  | Filter by measures, dimensions, and absolute or relative dates | ✓                 |                       |
| Support for query results limits  Charts and Tables  Bar  Column  Stacked Bar  Stacked Column  Scatter Plot  Donut  Heat Map   | View lenses using SAQL or SOQL step types                      | ✓                 | ✓                     |
| Charts and TablesBarColumnStacked BarStacked ColumnScatter PlotDonutHeat Map   | View lenses using Apex step types (beta)                       |                   |                       |
| Bar  Column  Column  Stacked Bar  Stacked Column  Control  Column  Control  Column  Control   | Support for query results limits                               | ✓                 | ✓                     |
| Column  Stacked Bar  Stacked Column  Scatter Plot  Donut  Heat Map   | Charts and Tables  |                   |                       |
| Stacked Bar  Stacked Column  Scatter Plot  Donut  Heat Map   | Bar  | ✓                 | ✓                     |
| Stacked Column  Scatter Plot  Donut  Heat Map  | Column   | ✓                 | ✓                     |
| Scatter Plot  Donut  Heat Map  | Stacked Bar  | ✓                 | ✓                     |
| Donut  Heat Map  | Stacked Column   | ✓                 | ✓                     |
| Heat Map 🗸 🗸   | Scatter Plot   | ✓                 | ✓                     |
|  | Donut  | ✓                 | ✓                     |
| Line 🗸 🗸   | Heat Map   | ✓                 | ✓                     |
|  | Line   | ✓                 | ✓                     |

| Feature                              | Analytics for iOS | Analytics for Android |
|--------------------------------------|-------------------|-----------------------|
| Horizontal/Vertical Dot Plot         | ✓                 | ✓                     |
| Timeline                             | ✓                 | ✓                     |
| Time Bar                             | ✓                 | ✓                     |
| Time Combo                           | ✓                 | ✓                     |
| Waterfall                            | ✓                 | ✓                     |
| Stacked Waterfall                    | ✓                 | ✓                     |
| Combo (Bar and Line)                 | ✓                 | ✓                     |
| Funnel                               | ✓                 | ✓                     |
| Origami                              | ✓                 | ✓                     |
| Sankey                               |                   |                       |
| Metrics Radar                        | ✓                 | ✓                     |
| Мар                                  | ✓                 | ✓                     |
| Bubble Map                           | ✓                 | ✓                     |
| Custom Map                           | ✓                 |                       |
| Geo Map                              | ✓                 | ✓                     |
| Pyramid                              | ✓                 | ✓                     |
| Stacked Pyramid                      | ✓                 | ✓                     |
| Gauge                                | ✓                 | ✓                     |
| Polar Gauge                          | ✓                 | ✓                     |
| Flat Gauge                           | ✓                 | ✓                     |
| Rating                               | ✓                 |                       |
| Matrix                               | ✓                 | ✓                     |
| Tree Map                             | ✓                 | ✓                     |
| Calendar Heat Map                    |                   |                       |
| Parallel Coordinates                 | ✓                 | ✓                     |
| Values Table                         | ✓                 | ✓                     |
| Compare Table (without summary rows) | ✓                 | ✓                     |
| Pivot Table                          |                   |                       |
| Chart and Table Properties           |                   |                       |
| Title, subtitle customization        | ✓                 | ✓                     |
|                                      |                   |                       |

| Feature                                | Analytics for iOS | Analytics for Android |
|--|-------------------|-----------------------|
| Border customization                   | ✓                 | ✓                     |
| Text customization                     | ✓                 | ✓                     |
| Number customization                   | ✓                 | ✓                     |
| Conditional formatting/styling options | ✓                 | ✓                     |
| Images in charts                       | ✓                 |                       |
| Table column and cell customization    | ✓                 | ✓                     |
| Images in tables                       |                   |                       |
| Themes in tables                       | ✓                 | ✓                     |
| Trellis                                | ✓                 | ✓                     |
| Reference lines                        | ✓                 | ✓                     |
| Selection of multiple chart elements   | ✓                 | ✓                     |
| Focus on multiple sections             |                   |                       |
| Dashboard Widgets                      |                   |                       |
| Global filters                         | ✓                 | ✓                     |
| Dashboard Navigation                   | ✓                 | ✓                     |
| Container                              | ✓                 | ✓                     |
| Date Range selector                    | ✓                 | ✓                     |
| Link                                   | ✓                 | ✓                     |
| Image (except .svg files)              | ✓                 | ✓                     |
| List selector                          | ✓                 | ✓                     |
| Number (view only)                     | ✓                 | ✓                     |
| Measure Range selector                 | ✓                 | ✓                     |
| Text                                   | ✓                 | ✓                     |
| Toggle                                 | ✓                 | ✓                     |
| Open as lens                           | ✓                 | ✓                     |
| Dashboard Properties                   |                   |                       |
| Custom background images               | ✓                 | ✓                     |
| Themes                                 | ✓                 | ✓                     |
| Gutter color options                   |                   |                       |
| Dynamic start values                   | ✓                 | ✓                     |

| Feature   | Analytics for iOS | <b>Analytics for Android</b> |
|---|-------------------|------------------------------|
| User tokens in queries  | ✓                 | ✓                            |
| Static step, selection, and result bindings                                 | ✓                 | ✓                            |
| Nested bindings   | ✓                 | ✓                            |
| Bindings using the visualizationType widget property (dynamic chart types)  | ✓                 | ✓                            |
| Connected data sources  | ✓                 | ✓                            |
| Customized display values   | ✓                 | ✓                            |
| Image tooltips  | ✓                 | ✓                            |
| Access and Security   |                   |                              |
| Configure connections to multiple instances from the login page             | ✓                 |                              |
| Switch between multiple Salesforce accounts without logging out             | ✓                 |                              |
| Control app access with a security passcode                                 | ✓                 | ✓                            |
| Forget all trusted domains  | ✓                 |                              |
| Use Connected App security settings to meet industry compliance regulations | ✓                 | ✓                            |
| Get enhanced security with Mobile Device Management (MDM)                   | ✓                 | ✓                            |
| Miscellaneous   |                   |                              |
| Offline mode  |                   |                              |
| Presentation mode   | ✓                 |                              |
| Developer mode  | ✓                 | ✓                            |
| Spotlight search  | ✓                 |                              |

# Download the Analytics Mobile App

Click the link to go to the download site for the iOS or Android Analytics mobile app.

For Analytics for iOS, go to iTunes.

For Analytics for Android, go to Google Play.

# Learn How to Use Analytics for iOS

Access your data anywhere with the Analytics for iOS mobile app. For the complete online help, go to Analytics for iOS. Get up and running with these online help pages.

## IN THIS SECTION:

Log In from Analytics for iOS

Log in to Salesforce to explore data from your org.

## Learn Your Way Around Analytics for iOS

Explore your data using the control bar at the bottom of the screen and a few simple gestures.

# Log In from Analytics for iOS

Log in to Salesforce to explore data from your org.

- 1. Tap the icon in the upper left corner to open the Select Account screen.
- 2. Tap Add New Account.
- 3. (Optional) To connect to a sandbox instance or to add a new connection, tap . Note: Don't tap Use Custom Domain; instead tap and then either select a connection or add one by tapping the plus sign.
- **4.** Enter your user name and password, and then tap **Log In**.
  - Note: Your desktop browser must be set to allow cookies.
- **5.** Tap **Allow** to grant permission to Analytics on mobile.

  Analytics reloads on your device, and you'll see your pinned apps on the home screen!

# Learn Your Way Around Analytics for iOS

Explore your data using the control bar at the bottom of the screen and a few simple gestures.

## My Analytics Apps

The home screen, My Analytics Apps, is your customizable apps home. Each app has a clickable tile that gives you access to info and app actions.

Tap the tile to open the app's browse screen and access the app's assets. Or, tap \_\_\_ on the tile to open the info/action panel. App actions can include Browse ( ), Run, Get Link, and Pin.

Customize your Analytics home by pinning your favorite and often used apps. Whether you pin apps on mobile or in Analytics on desktop, you'll see the same pinned apps on your Analytics home.

#### Q Browse

Open Browse by tapping  $\mathbb{Q}$  on the control bar at the bottom of the screen.

In the list, you can scroll through, filter, and open apps, dashboards, lenses, and datasets. If you've marked assets as "Favorite," they have a yellow star, and a **Favorites** filter appears.

Tap the magnifier at the top ( ) to enter search terms. Tap the toggle to sort the list between alphabetical ( ) and most recently used ( ) order.

Notice that each asset has \_\_\_. Tap it to open a panel where you can see information such as the asset's dataset or which app it's in. From the panel, you can also mark as "Favorite," open, get the link, run, or delete, depending upon the asset and your access to it.

#### **Running Apps**

When viewing a dashboard, tap the down arrow () in the header next to the dashboard's name to open a dropdown list and select another dashboard in the app. To refresh a dashboard and return to its default state, tap the curved arrow ().

## Notifications

Open the notifications tracking screen by tapping . When you set notifications in Analytics on desktop, the tiles for tracking progress appear here. Tap a tile to go directly to the dashboard that contains the notification.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To log in to Salesforce from Analytics for iOS or Android:

Use Analytics

# **Settings**

Open Settings by tapping 🌣 at the lower right side of the screen. The Settings screen is where you can:

- Switch on Presentation Mode.
- Add data to Analytics.
- Change settings, send feedback, and get help, and share the Analytics App.
- Log out of your org.

## **A Few Simple Gestures**

These gestures help you quickly navigate through Analytics.

| Gesture                           | Result  |
|-----------------------------------|---|
| Swipe up                          | Scroll down lists and dashboards.   |
| Swipe down                        | Scroll up lists and dashboards.   |
|                                   | <ul> <li>Refresh lists when at the top of the list.</li> </ul>  |
|                                   | <ul> <li>When creating a filter, pull down to open the text entry field<br/>for the Contains option.</li> </ul>   |
| Swipe left                        | When in a paginated dashboard, flip between screens.  |
|                                   | When on the home screen, flip between asset filters.  |
|                                   | <ul> <li>If you have permission, swiping left on an app, lens,<br/>dashboard, or dataset reveals buttons to run, pin, share,<br/>favorite, or delete, depending on the asset.</li> </ul>                          |
|                                   | • While adding measures, filters, or groupings to a lens, swipe left over an applied condition to reveal a delete button.   |
| Swipe right                       | When in a paginated dashboard, flip between screens.  |
|                                   | When on the home screen, flip between asset filters.  |
| Press (for devices with 3D Touch) | <ul> <li>On the Home screen, press the Analytics icon to open the<br/>shortcuts menu. The menu lets you share, search within<br/>Analytics, or go directly to the two most recently viewed<br/>assets.</li> </ul> |
|                                   | <ul> <li>On a dashboard or lens, press lightly to peek at the asset,<br/>and press deeper to pop it open.</li> </ul>  |

# Learn How to Use Analytics for Android

Access your data anywhere with the Analytics for Android mobile app. For the complete online help, go to Analytics for Android. Get up and running with these online help pages.

#### IN THIS SECTION:

#### Log In from Analytics for Android

Log in to Salesforce to explore data from your org.

## Learn Your Way Around Analytics for Android

Explore your data using the home screen, the navigation menu, and a few simple gestures.

## Log In from Analytics for Android

Log in to Salesforce to explore data from your org.

- 1. Analytics opens to the log in screen. If you are already logged in and want to change to another org, tap = to open the navigation menu. Then tap Log out.
- 2. Enter your user name and password, and then tap Log In.
  - Note: Your desktop browser must be set to allow cookies.
- **3.** Tap **Allow** to grant permission to Analytics on mobile.

  Analytics reloads on your device, and you'll see your pinned apps on the home screen!

# Learn Your Way Around Analytics for Android

Explore your data using the home screen, the navigation menu, and a few simple gestures.

#### The Home Screen

The home screen is the first thing that you see when you open Analytics on your mobile device. The home screen consists of the header and a list of Analytics assets.

In the header, you can access:

- Lists of your apps, dashboards, and lenses—in most recently used order.
- Navigation (=) to change settings, get help, and log out.
- Search ( ).

#### The Navigation Menu

Open the navigation menu from the home screen by tapping 

. The navigation menu is where you can:

- Change settings.
- Send feedback.
- Get help.
- Log out of your org.

## **A Few Simple Gestures**

These gestures help you quickly navigate through Analytics.

| Gesture    | Result   |  |
|------------|--|--|
| Swipe up   | Scroll down lists and dashboards.  |  |
| Swipe down | <ul><li>Scroll up lists and dashboards.</li><li>Refresh lists when at the top of the list.</li></ul> |  |

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

## **USER PERMISSIONS**

To log in to Salesforce from Analytics for iOS or Android:

Use Analytics

| Gesture     | Result   |  |
|-------------|--|--|
| Swipe left  | <ul><li>When in a paginated dashboard, flip between screens.</li><li>When on the home screen, flip between asset filters.</li></ul>        |  |
| Swipe right | <ul><li>When in a paginated dashboard, flip between screens.</li><li>When on the home screen, flip between asset filters.</li></ul>        |  |
| Scroll      | Use one finger to scroll a dashboard or a scrolling widget; use two fingers to scroll the dashboard when directly over a scrolling widget. |  |

# Set Up and Manage Analytics on Mobile

Optimize dashboard layouts for mobile devices, and administer Analytics for mobile.

#### IN THIS SECTION:

## Generate Unique Analytics Dashboard Layouts for Different Devices

After you add widgets to the dashboard, optimize the layout for each device on which the dashboards can be viewed. For example, you can remove widgets from a mobile phone layout to reduce the dashboard size for the smaller screen. You can also move widgets around in one layout and it doesn't affect the other layouts.

#### Connected App for Analytics on Mobile

Install the Salesforce Analytics App Package to allow your mobile clients to easily connect to your org. This package contains the Connected App component that gives you control over who's logging in and how your mobile clients share images and links.

#### Customize Analytics for iOS using Mobile SDK

Set custom login servers and manage access to settings on Analytics for iOS.

## Launch Einstein Analytics Directly from Your iOS App

The Einstein Analytics mobile app for iOS supports deep linking URL schemes, which allow a user to launch the app from a third-party or web application.

## Generate Unique Analytics Dashboard Layouts for Different Devices

After you add widgets to the dashboard, optimize the layout for each device on which the dashboards can be viewed. For example, you can remove widgets from a mobile phone layout to reduce the dashboard size for the smaller screen. You can also move widgets around in one layout and it doesn't affect the other layouts.

Watch a Demo: Optimize Wave Dashboards for Devices with Layouts (English Only)

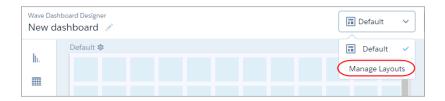
When you generate a new layout, Analytics adds the widgets from the currently selected layout to the new layout. If the current layout contains multiple pages, Analytics also copies the pages to the new layout.



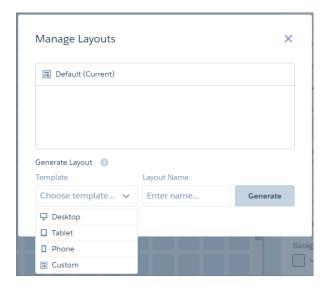
**Note**: Although you can add all chart types to a mobile layout, some aren't supported on mobile devices. For more information, see Analytics mobile limitations.

- 1. Open in the dashboard designer dashboard.
- 2. Because each layout can contain different widgets, open the layout that contains the widgets that you want to include in your new layout.

3. From the Layouts menu, select Manage Layouts.



**4.** Select the layout template, and enter a unique layout name.



Each layout template comes with predefined layout properties that you can change.

## 5. Click Generate.

The layout properties appear for the new layout. If needed, click 🌼 to show the Layout panel.



**6.** In the Layout panel, expand the following sections and change the default properties, if needed.

#### General

Set the layout name, designer grid settings, and background color.

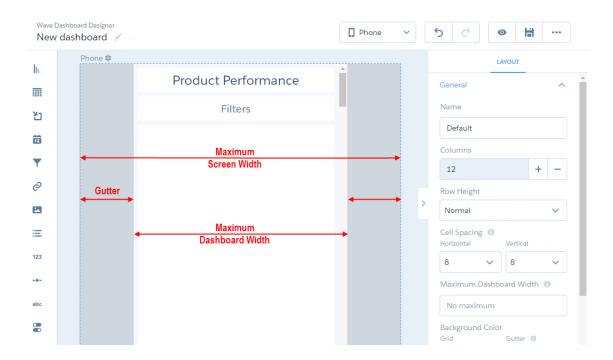
#### Device

Specify information about the devices that can use this layout. For more information about how Analytics uses these properties to choose the right layout, see Rules for Choosing a Layout for a Device.

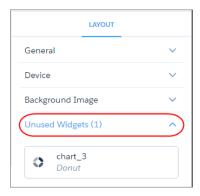
## **Background Image**

To apply a background image to the entire dashboard when this layout is used, enter the details about the background image. You don't have to include a background image.

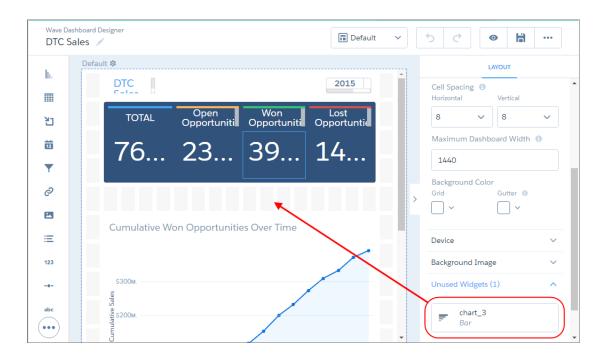
The designer previews the dashboard and layout based on the layout property settings. The designer updates the preview in real time so that you can see how your changes affect the display. If you shrink the maximum dashboard width, the designer shows you how the dashboard fits when using this layout. If needed, the designer rearranges the widgets to fit the new size.



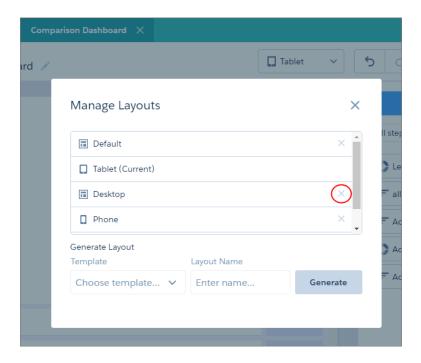
- **7.** Rearrange the widgets, if needed.
- **8.** To hide a widget from the layout, select the widget, and click ... If you hide a widget, it appears in the Unused Widgets section of the layout properties.



9. To add an unused widget to the layout, drag the widget from the Unused Widgets section to the canvas.



- **10.** To create a widget, drag the widget from the widget toolbar to the canvas.
  - Note: Analytics adds the widget only to the current layout. To add the widget to another layout, open the other layout and drag the widget from the "Unused Widgets" section of the layout properties.
- **11.** To save your layout changes, save the dashboard.
- 12. To delete a layout, in the Layouts menu, click **Manage Layouts**, and then click x next to the layout.





Note: You can't delete the layout that's currently open. To delete the current layout, switch to another one first.

## IN THIS SECTION:

### Layout Properties for Analytics Dashboards

Layout properties specify the layout name, designer grid settings, background settings, and requirements for devices that can use this layout. The properties apply only to dashboards created in the dashboard designer.

## Rules for Choosing a Layout for a Device

If multiple layouts are defined for a dashboard, Analytics chooses the optimal layout when displaying the dashboard on a device. To determine the optimal layout, Analytics uses the device properties specified for each layout.

# Connected App for Analytics on Mobile

Install the Salesforce Analytics App Package to allow your mobile clients to easily connect to your org. This package contains the Connected App component that gives you control over who's logging in and how your mobile clients share images and links.

- While logged in as an admin, navigate to https://login.salesforce.com/packaging/installPackage.apexp?p0=04tB0000000DKTA.
- 2. Select Install for All Users.

If you install the Connected App only for certain roles, then only those clients are subject to your policies.

- **3.** After clicking **Done**, click the Salesforce Analytics App Package and then **View Components**.
- **4.** Select iOS or Android. To configure policies and other settings, click **Edit**. When you are finished, save your changes.

For more information about Connected App settings, see Edit a Connected App.

**5.** If you want to disable sharing options for mobile users, click **New** in the Custom Attributes section.

All sharing options are enabled by default. To disable an option, add its attribute key and enter "false" for the attribute value. See the table for the supported attribute keys.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# USER PERMISSIONS

To install and configure Connected App:

Manage Analytics

| Attribute Key           | Mobile clients can share                 | Mobile Device   |
|-------------------------|--|-----------------|
| SHARE_IMAGE_AIRDROP     | Images via AirDrop                       | iOS             |
| SHARE_IMAGE_ CAMERAROLL | Images to Camera Roll                    | iOS             |
| SHARE_IMAGE_ OPEN       | Images to other apps and activities      | iOS             |
| SHARE_IMAGE_ S1         | Images to Salesforce                     | iOS             |
| SHARE_IMAGE_ EMAIL      | Images via email                         | iOS             |
| SHARE_LINK_NFC          | Links via Near Field Communication (NFC) | Android         |
| SHARE_LINK_BLUETOOTH    | Links via Bluetooth                      | Android         |
| SHARE_LINK_AIRDROP      | Links via AirDrop                        | iOS             |
| SHARE_LINK_ CLIPBOARD   | Links to Clipboard                       | iOS and Android |

| Attribute Key    | Mobile clients can share  | Mobile Device   |
|------------------|---|-----------------|
| SHARE_LINK_ S1   | Links to Salesforce   | iOS and Android |
| SHARE_LINK_EMAIL | Links via email   | iOS and Android |
| SPOTLIGHT_SEARCH | Mobile clients can see Analytics assets in Spotlight search results | iOS             |

- Note: To apply custom attributes to connected users, you can revoke them and ask them to reconnect.
- **6.** To view and control how mobile clients connect to your Analytics-enabled org, from Setup, enter *Connected Apps* in the Quick Find box, then select **Connect Apps OAuth Usage**.

You can block user sessions, revoke individual users, and drill in to user details. For more information, see Monitoring Usage for a Connected App.

Note: For certificate-based authentication, users must set their desktop browsers to allow cookies.

For additional security, use Mobile Device Management (MDM) with the option to show only authorized hosts. The "OnlyShowAuthorizedHosts" key allows you to hide the "Add New Account" plus sign in the mobile app. For more information, see Using MDM with Salesforce Mobile SDK Apps.

# Customize Analytics for iOS using Mobile SDK

Set custom login servers and manage access to settings on Analytics for iOS.

The following set up options are available for Analytics for iOS.

**Set Custom Login Servers** 

Manage Access to Settings

# Launch Einstein Analytics Directly from Your iOS App

The Einstein Analytics mobile app for iOS supports deep linking URL schemes, which allow a user to launch the app from a third-party or web application.

An administrator or developer can customize a URL scheme to perform one of the following actions when the app launches:

- View a particular asset type in the Einstein Analytics app (dashboard, lens, or application)
- Apply a runtime state (selections and filters)

For example, you can create a deep link to a dashboard in the Einstein Analytics app. Then when users receive the link in an email, they can click it to go directly to the dashboard.



**Note:** Some deep link scheme features, such as passing filters and selections, apply only to dashboards. Support is only for dashboards that are built using the dashboard designer.

#### **URL Scheme Format**

Use the following format to make a request to an Einstein Analytics app.

<scheme\_name>://<assetType>/<assetID>?orgId=<orgId>&loginHost=<loginHost>&dashboardState=<url-encoded
json>

The following parameters are supported.

| Variable       | Туре   | Description  | Required |
|----------------|--------|--|----------|
| scheme_name    | String | The value must be sfanalytics.   | Yes      |
| assetType      | String | Supported values:  | Yes      |
|                |        | dashboard  |          |
|                |        | lens   |          |
|                |        | application  |          |
| assetID        | String | Unique asset identifier. The identifier is the 18-character code beginning with 0FK found in the asset URL.  | Yes      |
| orgID          | String | ID of the organization that contains the content. If users are logged in to the same org ID, they are directed to the content. If users are not logged in to the same org ID, they are redirected to the login screen.           | Yes      |
| loginHost      | String | URL that displays the login screen when the user is not logged in to the application.  | Yes      |
| dashboardState | String | Available only when assetType is dashboard.  State of the dashboard and all its datasets. The state depends on user selection, start values, global filters, and external or initial filters that are applicable to the dataset. | No       |

Example (not including dashboardState):

 $sfanalytics://dashboard/0FKB00000006TFVOA2? orgId=00DB00000000XXX\&loginHost=cs4.salesforce.com \\ Refer to the information in the following tables when constructing the JSON string for dashboardState. \\$ 

## dashboardState

| Property Name | Туре                               | Description  |
|---------------|------------------------------------|--|
| datasets      | Map <string, state[]=""></string,> | The list of datasets for which a specific state is applied. The key string is the API name of the dataset. |

## state

| Property Name | Туре            | Description  |
|---------------|-----------------|--|
| fields        | String[]        | The list of dimension or measure fields for which selection or filtering is applied. |
| filter        | dashboardFilter | The filter that is applied to the dashboard.   |
| selection     | String[]        | The list of values that is selected.   |

## dashboardFilter

| Property Name | Туре                 | Description   |
|---------------|----------------------|---|
| operator      | String               | Supported operators for dimensions: "in", "not in", "matches"  Supported operators for measures: "==", "!=", ">=", ">", "<=", "<" |
| values        | String[] or Double[] | The list of dimension or measure values corresponding to the fields.  |

#### **JSON Examples**

The following syntax causes value1 and value2 to be selected on field1. It also filters on field2 based on operator1 with values 3 and values 4.

Example of the dashboardState JSON.

```
{
     "datasets": {
         "Opportunities": [
             {
                 "fields": ["OpptyName"],
                 "selection": ["RelateIQ", "BeyondCore"],
                 "filter": {
                     "operator": "not in",
                     "values": ["Salesforce"]
                 }
             },
                 "fields": ["State", "Country"],
                 "selection": [["TX", "US"]],
                 "filter": {
                     "operator": "in",
                     "values": [["TX, US"], ["AL", "DE"]]
             }
         ],
         "Accounts": [
             {
                 "fields": ["Revenue"],
                 "selection": [],
                 "filter": {
                     "operator": ">=",
                     "values": [[1000000]]
                 }
             }
         ]
    }
 }
```

The JSON must be rewritten with no whitespace characters.

```
{"datasets":{"Opportunities":[{"fields":["OpptyName"],"selection":["RelateIQ","BeyondCore"],"filter":{"operator":"not in","values":["Salesforce"]}}, {"fields":["State","Country"],"selection":[["TX","US"]],"filter":{"operator":"in","values":[["TX, US"],["AL","DE"]]}}],"Accounts":[{"fields":["Revenue"],"selection":[],"filter":{"operator":">=","values":[[1000000]]}}]}}
```

Finally, the JSON must be rewritten with URL encoding.

With this URL encoded JSON, the example earlier in this topic is modified as follows.

```
sfanalytics://dashboard/0FKB00000006TFVOA2?orgId=00DB0000000XXX
```

# Limitations of Analytics on iPhone® and iPad®

Be aware of these mobile-specific limitations.

## **General Limitations**

| Feature        | Limitations  |  |
|----------------|--|--|
| Layout         | Landscape mode is supported only for iPad. Portrait mode is supported for both iPad and iPhone. Split screen isn't supported.  |  |
| Share          | You can't create, edit, or delete sharing permissions for apps.  |  |
| Delete         | • Deleting a dashboard or lens in Analytics on your mobile device also deletes it in your Salesforce org on the Web.   |  |
|                | • Once deleted, a dashboard or lens can't be recovered. The only exception is the playground sample data, which can be restored from the Settings screen.                            |  |
|                | Datasets can't be deleted from your mobile device.   |  |
| Playground     | Imported or created data, lenses, and dashboards aren't backed up in a device backup. Playground sample data can be restored from the Settings screen.                               |  |
| Favorites      | Pinned apps are shared across all your logged in devices. Favorites of dashboards, lenses, and datasets are stored locally on your mobile device and aren't synced to other devices. |  |
| Other Features | <ul> <li>Creating apps and dashboards isn't supported.</li> <li>Custom bulk actions via Visualforce aren't supported.</li> <li>Offline mode isn't available.</li> </ul>              |  |

# Data Exploration and Visualization Limitations

| Feature                                     | Limitations   |
|---|---|
| Charts and Tables                           | Charts don't support multiple selection actions such as copy and focus.   |
|   | In Compare Tables, summary rows aren't shown.   |
|   | Row heights are optimized (on desktop, row heights are fixed).  |
| Widgets                                     | Text  |
|   | Vertical alignment options aren't supported for text widgets on mobile.   |
|   | Range   |
|   | If necessary, ranges are automatically truncated by appending an ellipsis () to the minimum and maximum values.   |
|   | Вох   |
|   | Boxes can't display images that are encoded in a string, such as a URL.   |
|   | Image   |
|   | The image widget doesn't support .svg files.  |
|   | Number  |
|   | Exploring a number widget isn't supported.  |
| Queries                                     | • If more measures or groupings are added to a chart than the chart type supports, then the chart becomes a Compare Table.  |
|   | • The maximum results returned by a query vary based on the step type that contains the query. For example, the default query limit for an aggregate step with multiple groupings is 500, so just the first 500 records are displayed by default. The default can be changed in the dashboard designer in Analytics Studio. |
|   | Apex steps (beta) aren't supported on mobile.   |
| Dashboards designed in the Analytics Studio | <ul> <li>Analytics dashboards designed in your Salesforce org on the Web can be viewed in Analytics for iOS on<br/>your local device. Some widgets appear different on mobile.</li> </ul>   |
|   | • To optimize dashboards for mobile, generate a layout for phone or tablet in the dashboard designer. If the dashboard was built in the classic designer, you can optimize it for mobile by adding a layouts section in the dashboard's JSON file.  |
|   | Gutter color options aren't supported.  |
|   |   |

# **Data Import Limitations**

| Feature                     | Limitations  |
|-----------------------------|--|
| Analytics Data<br>Connector | <ul> <li>Only CSV, TSV, and XLSX files, and ZIP files containing these types, can be imported as datasets.</li> <li>Imported datasets aren't available in Analytics on the Web. They are only available on your mobile device in the playground.</li> <li>Imported datasets aren't encrypted.</li> </ul> |

## **Feature**

## Limitations

## Date Formats

Dates can be imported as any of these formats:

- YYYY
- YYYY-MM
- YY-MM
- YYYY-MM-DD
- YY-MM-DD
- YYYYMMDD
- YYMMDD
- YYDDMM
- MM/DD/YY
- DD/MM/YY
- YY/MM/DD
- YY-MM-DD HH:MM:SS
- YYYYMMDDHHMMSS
- YYMMDDHHMMSS
- YY-MM-DDTHH:MM:SS
- YYYY-MM-DDTHH:MM:SSZ
- YY-MM-DDTHH:MM:SSZ
- YYYY-MM-DD HH:MM:SSZ
- YY-MM-DD HH:MM:SSZ
- YYYYMMDDTHH:MM:SSZ
- YYMMDDTHH:MM:SSZ
- YYYYMMDD HH:MM:SSZ
- YYYYDDMM
- YYYY/MM/DD
- YYYY/DD/MM
- DD/MM/YYYY
- MM/DD/YYYY
- YYYY-DD-MM
- DD-MM-YYYY
- MM-DD-YYYY
- DD.MM.YYYY
- DD.MM.YYYY HH:MM:SS
- DD.MM.YY HH:MM:SS
- MM.DD.YYYY
- DD-Mon-YY
- DD-Mon-YYYY
- DD-Mon-YYYY HH:mm

#### Feature Limitations

- YYYYMMDD HH:MM:SS
- YYYY/MM/DD HH:MM:SS
- MM/DD/YYYY HH:MM:SS
- MM/DD/YYYY HH:MM:SS AM/PM
- MM/DD/YY HH:MM:SS AM/PM
- DD/MM/YYYY HH:MM:SS
- YYYY/MM/DD HH:MM
- MM/DD/YYYY HH:MM
- DD/MM/YYYY HH:MM
- DD/MM/YY HH:MM:SS
- DD/MM/YYYY HH:MM:SS AM/PM
- DD/MM/YY HH:MM:SS AM/PM
- YYYY-MM-DD HH:MM:SS
- YY-MM-DD HH:MM:SS
- DD-MM-YYYY HH:MM:SS
- DD-MM-YY HH:MM:SS
- DD-MM-YYYY HH:MM:SS AM/PM
- DD-MM-YY HH:MM:SS AM/PM
- MM-DD-YYYY HH:MM:SS
- MM-DD-YYYY HH:MM:SS AM/PM
- MM-DD-YY HH:MM:SS AM/PM
- YYYY-MM-DD HH:MM
- DD-MM-YYYY HH:MM
- MM-DD-YYYY HH:MM
- YYYY-MM-DDTHH:MM:SS
- DD-MM-YYYYTHH:MM:SS
- MM-DD-YYYYTHH:MM:SS
- YYYY-MM-DDTHH:MM
- DD-MM-YYYYTHH:MM
- MM-DD-YYYYTHH:MM
- YYYY-MM-DDTHH:MM:SS-HH:MM
- YYYY-MM-DDTHH:MM:SS+HH:MM
- YYYY-MM-DDTHH:MM:SSTZD
- YYYYMMDDTHH:MM:SS
- HH:MM:SS DD/MM/YYYY
- HH:MM:SS DD/MM/YY
- DD-MM-YYYYTHH

# Limitations of Analytics on Android Devices

Be aware of these mobile-specific limitations.

# General / Home

| Supported   | Not Supported  |
|---|--|
| <ul> <li>Viewing, filtering,<br/>and faceting<br/>dashboards and<br/>lenses</li> <li>Drilling in and<br/>getting details from<br/>lenses and widgets</li> </ul> | <ul> <li>Exploring datasets</li> <li>Saving or cloning lenses</li> <li>Deleting anything</li> <li>Creating or editing dashboards</li> <li>Importing data</li> <li>Local playground data</li> </ul> |
| <ul> <li>Posting images or<br/>links to Chatter</li> </ul>  | <ul><li>Org switching without logout</li><li>Viewing item metadata</li></ul>   |
| <ul> <li>Opening Salesforce<br/>records directly<br/>from dashboards</li> <li>Linking to external<br/>sites</li> </ul>  | <u> </u>   |

# Charts and Visualizations

Unsupported chart types render as Values Tables.

# **Supported**

# **Not Supported**

- Horizontal / Vertical
- Pivot Table
  - Bar chart
- Calendar Heat Map

Custom Map

- Horizontal / Vertical Stacked Bar chart
  - Rating
- Line chart
- Sankey

- Timeline
- Time Bar
- Time Combo
- Matrix
- Horizontal / Vertical Dot Plot
- Donut chart
- Heat Map
- Waterfall chart
- Stacked Waterfall chart

# Supported Not Supported

- Treemap
- Funnel chart
- Scatter Plot
- Flat and Polar Gauges
- Combination Bar-Line chart
- Choropleth (Map) chart
- Metrics Radar chart
- Compare Table
- Values Table
- Gauge
- Stacked Pyramid
- Geo Map
- Origami
- Parallel Coordinates

# **Dashboard Widgets**

# Supported Not Supported

- Pill button / Toggle YouTube widget
- List selector
- Text widget
- Number widget
- Date Range selector
- Box widget
- Container widget
- Link widget
- Global Filters widget
- Measure Range selector
- Image widget

# Set Up the Analytics Platform

Set up your organization to use the Salesforce Analytics platform by enabling Analytics and assigning basic permission sets or creating and assigning your own custom permission sets.

The information here describes how to set up your organization to use the Analytics platform and Analytics templated apps and Apps.

#### IN THIS SECTION:

Learn About Analytics Platform Licenses and Permission Sets
 Introduce yourself to Analytics setup fundamentals, which apply to both basic and advanced setup procedures.

#### 2. Basic Analytics Platform Setup

Follow these few steps to give users in your organization access to Analytics platform, templates, and apps quickly. Basic setup uses permission sets included with the Analytics Platform license, which cover the majority of most organizations' analytics needs.

#### 3. Advanced Analytics Platform Setup

Follow these steps to learn the details of Analytics permissions and to create and assign your own custom permission sets.

#### 4. Complete Setting up the Analytics Platform

After assigning permission sets with either basic or advanced setup, follow these optional procedures to enhance the Analytics experience and fine-tune Analytics access to Salesforce data.

#### 5. Analytics Requirements

This section provides requirements for using Analytics.

#### 6. Analytics Limits

This section describes Analytics limits.

#### 7. Analytics Limitations

Analytics differs from other Salesforce features in some ways.

#### SEE ALSO:

Set Up the Analytics Platform with Licenses Purchased Before October 20, 2015
Migrating From Analytics Licenses Purchased Before 10/20/2015 to New Analytics Platform Licenses
Analytics Requirements
Analytics Limits
Analytics Limitations

# Learn About Analytics Platform Licenses and Permission Sets

Introduce yourself to Analytics setup fundamentals, which apply to both basic and advanced setup procedures.

Each Analytics Platform license is a single-user license that provides access to the Salesforce Analytics Cloud. It provides access to Analytics Platform and Analytics templated apps and Apps features and functionality. The license limits your instance of the Analytics Cloud to 100 million rows of data. If you require more data, you can purchase Analytics Cloud - Additional Data Rows, which entitles you to an additional 100 million rows.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# Important:

- Analytics license data storage limits are contractual, not technical. Licensee agrees to strictly monitor its total number of data rows.
- If you purchased an Analytics Platform license before October 20, 2015 with Analytics Cloud Builder or Analytics Cloud Explorer permission set licenses: Read Set up the Analytics Platform With Licenses Purchased Before October 20, 2015. If you're migrating users from Builder or Explorer licenses to the new Analytics Platform licenses: See Migrating From Analytics Licenses Purchased Before 10/20/2015 to New Analytics Platform Licenses before you start the setup process for those users.
- If you disable Analytics, user permissions are removed from each defined permission set. If you re-enable Analytics later, you must define the permission sets again.

# **Analytics Platform License Permission Sets**

The Analytics Platform license includes two prebuilt permission sets:

- **Einstein Analytics Platform Admin** enables all permissions required to administer the Analytics platform, including permissions to enable creating Analytics templated apps and Apps.
- Einstein Analytics Platform User enables all permissions required to use the Analytics platform and Analytics templated apps and Apps

Basic setup involves choosing and assigning the prebuilt permission sets. To create your own custom Analytics permission sets use advanced setup.

When you assign any Analytics permission set to users in your org, Salesforce *auto-assigns* the Analytics Platform permission set license to that user.



Note: For efficiency, you can assign a permission set to groups of users. You can also assign multiple permission sets to a user.

You can assign an Analytics permission set license along with any of the following Salesforce user licenses:

- Lightning Platform (app subscription)
- Lightning Platform (one app)
- Full CRM
- Salesforce Platform
- Salesforce Platform One

# Basic Analytics Platform Setup

Follow these few steps to give users in your organization access to Analytics platform, templates, and apps quickly. Basic setup uses permission sets included with the Analytics Platform license, which cover the majority of most organizations' analytics needs.

# **Enable Analytics**

- 1. Go to Salesforce Setup and enter Analytics in the Quick Find / Search field.
- 2. Select Getting Started.
- 3. Click Enable Analytics.

## Select and Assign Permission Sets

1. In Salesforce Setup, select Users.

#### 2. Select Permission Sets.

- **3.** Select one of the two prebuilt permission sets.
  - **Einstein Analytics Platform Admin** enables all permissions required to administer the Analytics platform, including permissions to enable creating Analytics templated apps and Apps.
  - **Einstein Analytics Platform User** enables all permissions required to use the Analytics platform and Analytics templated apps and Apps

That opens the page for the selected permission set.

- 4. Click Manage Assignments. The next page shows the users already assigned the selected permission set.
- 5. Click Add Assignments to see all the users in your org.
- **6.** Select one or more users by checking the box next to their name in the left-hand column.
- 7. Click Assign.

You'll see a page that tells you if the permission set has been assigned. If permission set didn't succeed for one or more users, Salesforce tells you why. You can fix the problem and try again.

# Advanced Analytics Platform Setup

Follow these steps to learn the details of Analytics permissions and to create and assign your own custom permission sets.



Tip: For best results, follow the steps in the order shown.

#### IN THIS SECTION:

1. Learn About Analytics Permission Set Licenses and User Permissions

When you create your ownAnalytics permission sets, you start by selecting the Analytics Platform permission set license instead of using the prebuilt permission sets. The permission set license includes the user permissions required to explore data with and manage the Salesforce Analytics platform.

2. Identify Analytics Platform User Types

Identifying types of Analytics platform users helps assure that custom permission sets meet your team's analytics needs.

3. Enable Analytics and Create Permission Sets

After identifying user types, be sure to enable Analytics in your org. Then select a permission set license and create your permission sets.

4. Assign Analytics Permission Sets to Users

Assign custom permission sets to one or more users—either one at a time, or in bulk—to give them access to Analytics functionality.

## Learn About Analytics Permission Set Licenses and User Permissions

When you create your ownAnalytics permission sets, you start by selecting the Analytics Platform permission set license instead of using the prebuilt permission sets. The permission set license includes the user permissions required to explore data with and manage the Salesforce Analytics platform.

- Each Analytics platform user needs an Analytics Platform permission set license to use the Analytics platform. Creating a permission set and assigning it to a user *auto-assigns* the Analytics platform permission set license to that user. You can also manually assign permission set licenses to users.
- Community users need an Analytics for Communities permission set license to view Analytics apps shared via dashboards embedded in Visualforce pages.

The Analytics Platform permission set license enables the following permissions.

| User Permission                         | What It Enables  |
|---|--|
| "Use Analytics"                         | Run Analytics apps to which you have access; view their datasets, lenses, and dashboards; and create and edit lenses.  |
| "Create and Edit Analytics Dashboards"  | Creating, editing, and deleting Analytics dashboards.  |
| "Create Analytics Apps"                 | Creating, editing, deleting, and sharing Analytics applications.   |
| "Upload External Data to Analytics"     | Uploading external data to Analytics to create a dataset. Monitoring dataflow and system jobs in the data monitor.   |
| "Edit Analytics Dataflows"              | Editing, starting, stopping, and rescheduling the dataflow. Creating, editing, and running dataset recipes. Monitoring dataflow and system jobs in the data monitor. Use discretion when assigning this user permission because it enables access to all Salesforce object data to which the Integration User has access. See Salesforce Data Access in Analytics. |
| "Edit Dataset Recipes"                  | Creating, editing, and running dataset recipes. Does note enable editing security predicates in existing recipes, or running and scheduling recipes based on datasets that have security predicates.   |
| "Manage Analytics"                      | Accessing all Analytics features. Provides Analytics administrator-level capabilities.   |
| "Manage Analytics Templated Apps"       | Create and manage apps based on Analytics Templates. Some templates require additional permissions. See the help for each template.  |
| Use Analytics Templated Apps            | Use apps based on Analytics Templates. Some templates require additional permissions. See the help for each template.  |
| "Adoption Analytics Templates and Apps" | Create and use apps based on the Adoption Analytics template.  |
| "Download Analytics Data"               | Downloading screenshots and data in tabular format through the Analytics user interface.   |
| "Add Analytics Remote Connections"      | Add connections to external data sources to enable replication in Analytics.   |
| "Trend Report Data in Analytics"        | Trend the data of a report with an Analytics dataflow.   |

You create your own permission sets based on these permissions.



**Note**: When you create permission sets for Analytics users, selecting any Analytics permission automatically enables the "Use Analytics" permission as well. Also, the type of access granted on an app controls the actions that can be performed on its datasets, lenses, and dashboards. For example, if a user has the "Use Analytics" permission, the user must also have Viewer access on an app to view its datasets, lenses, and dashboards.

The Analytics for Communities permission set license enables the "View Analytics on Communities pages" permission. That permission enables external users to view Analytics dashboards embedded in VisualForce pages in their communities. See Enable Analytics for Communities on page 71.

# **Identify Analytics Platform User Types**

Identifying types of Analytics platform users helps assure that custom permission sets meet your team's analytics needs.

The Analytics Platform license includes the permissions that enable users in your organization to import, work with, and explore data using the Analytics platform. The license also includes permissions that let administrators manage Analytics. To set up Analytics in the most useful way, think through the different ways people access Analytics features and categorize them into user types. Here are a few examples.

Most people on your team fall into two basic categories:

- Users, who view Analytics dashboards, lenses, and datasets and occasionally import data to Analytics.
- Administrators or managers, who access to the full range of Analytics functionality to create
  apps, dashboards, lenses, and datasets, edit data, and otherwise customize the Analytics experience.

Accordingly, when you set up the Analytics platform, creating two basic permission sets can meet the needs of most of your organization:

- A "view" permission set that contains the permissions needed by most basic-level users when they access Analytics.
- A "manage" permission set that's reserved for a select few administrators and managers and contains permissions to use all Analytics features

You can set up Analytics however you want, defining other user types and permissions sets based on the needs of users in your organization. For example, you can create a "superuser" permission set for users who create and share apps and dashboards. Or, a "data wizard" permission set would enable other users to work closely with datasets.

We focus on two main types of people on your team -- users and administrators -- in the example permission sets we describe in our detailed setup instructions.

## **Enable Analytics and Create Permission Sets**

After identifying user types, be sure to enable Analytics in your org. Then select a permission set license and create your permission sets.

#### **Enable the Analytics Platform**

To use the Analytics platform, first enable it for your organization.

- 1. In the Salesforce Setup menu, under Administer, click **Analytics | Getting Started**.
- 2. Click Enable Analytics.

## **Create Permission Sets**

The next step in the setup process is to create permission sets made up of Analytics user permissions. We show you how to create two permission sets:

- Manage Analytics permission set, for users who create and administer Analytics.
- View Analytics permission set, for users who explore app dashboards and datasets.

# Note:

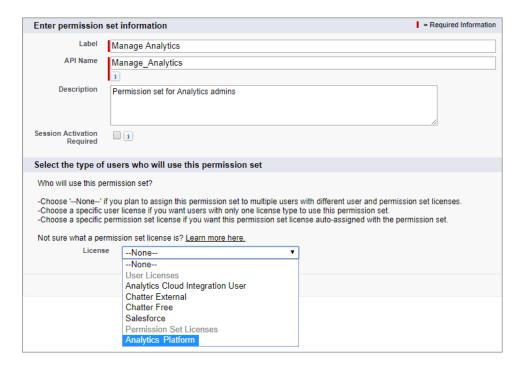
- Customers who purchased Analytics before October 20, 2015: See Set up the Analytics Platform With Licenses Purchased Before October 20, 2015 before following the instructions here.
- The Manage Analytics permission set enables the equivalent functionality provided by the previous Analytics Builder license (purchased before October 20, 2015). If you have a Builder license or you're migrating to the current Analytics platform license, follow these steps to create a permission set with the same functionality.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

- The View Analytics permission set enables the equivalent functionality provided by the previous Analytics Explorer license (purchased before October 20, 2015). If you have an Explorer license or you're migrating to the current Analytics platform license, follow these steps to create a permission set with the same functionality.
- 1. In the Setup menu, under administer, click Manage Users | Permission Sets and then click New.
- 2. Enter Manage Analytics or View Analytics in the Label field, as appropriate. This automatically creates the API name as well. You can change it if you like, but it can't include spaces, end with an underscore, or have two consecutive underscores.
- 3. For License, select the license to associate with this permission set. In this case, select the Analytics Platform permission set license.



When you select a specific permission set license, any user assigned to the permission set is *auto-assigned* the permission set license. If you select --None--, you must *manually* assign the permission set license to users before you can add them to the new permission set.

- 4. Click Save. The Permission Set Overview page shows the new permission set. Now add user permissions to the set.
- 5. Click **System Permissions** to open the list of user permissions enabled by the Analytics Platform license. Then click **Edit**.
- **6.** Do one of the following.
  - If you're creating the Manage Analytics permission set, select "Manage Analytics" user permissions and click Save. You've
    successfully created a permission set that enables access to all Analytics features. You don't have to select any of the other
    individual permissions. Assign this permission set sparingly because it provides access to all Analytics features, many of which
    are inappropriate for most analytics users.
  - If you're creating the View Analytics permission set, select "Use Analytics" and "Upload External Data to Analytics" user permissions and click **Save**. You've successfully created a permission set that enables a user to view the Analytics datasets, lenses, and dashboards that they have permission to view, and to upload data files from outside Salesforce.
- **7.** You can now assign your new permission set to users, which is covered in Assign Permission Sets to Users. Repeat these steps for every user in your organization who requires access to Analytics.

# Assign Analytics Permission Sets to Users

Assign custom permission sets to one or more users—either one at a time, or in bulk—to give them access to Analytics functionality.

- 1. In the Setup menu, under administer, click Manage Users | Permission Sets.
- Click the permission set you want to assign to users. If you've followed the instructions in Enable
  Analytics and Create Service Analytics Permission Sets on page 67, select either the Manage
  Analytics or View Analytics permission sets.

# USER PERMISSIONS

To assign a permission set to users:

Assign Permission Sets

- 3. Click Manage Assignments and click Add Assignments.
- **4.** Select the users who need access to Analytics, and click **Done**. When you assign the permission set to users, Salesforce *auto-assigns* the Analytics Cloud Analytics Platform *permission set license* to those users.

Assign the Manage Analytics permission set sparingly, since it provides access to all Analytics features. Assign it only to users who administer or manage the Analytics platform.

# Complete Setting up the Analytics Platform

After assigning permission sets with either basic or advanced setup, follow these optional procedures to enhance the Analytics experience and fine-tune Analytics access to Salesforce data.

#### IN THIS SECTION:

#### Enable Preview Thumbnails for All Lenses and Dashboards

Make it easier for users to find their lenses and dashboards on the home page and on app pages. Replace the generic icons with preview thumbnails of the contents of all lenses and dashboards, including those assets that have row-level security restrictions.

#### **Enable Analytics for Communities**

Securely share Analytics apps with community partner and customer users.

#### Enable Conversational Exploration (Beta)

Quickly query and visualize data in guided, natural language conversations.

#### Enable the Analytics REST API

You can access Analytics datasets and lenses programmatically using the Analytics REST API. Selecting this option overrides the "APIEnabled" permission for individual users and gives all Analytics users (including Community users) access to the API.

#### Grant Users Access to the Dashboard Designer and Classic Designer

To grant users access to either dashboard designer, assign each of them the "Create and Edit Analytics Dashboards" user permission. For users to access the dashboard designer, the **Enable dashboard designer** setup option must also be enabled, which it is by default.

# **Enable Dashboard Views**

Enable this feature to allow each Einstein Analytics user to create their own unique views of a dashboard. By default, this feature is enabled for your org. If the feature is disabled and you re-enable it, all previously created views are available.

#### Enable Annotations on Dashboard Widgets

Annotate dashboard widgets with comments posted in the dashboard and in Chatter.

#### **Enable Downloading from Analytics**

Enable users to download the results from lens explorations and dashboard widgets as images (.png), Microsoft<sup>®</sup> Excel<sup>®</sup> (.xls), or comma-separated values (.csv) files.

#### Connected App for Analytics on Mobile

Install the Salesforce Analytics App Package to allow your mobile clients to easily connect to your org. This package contains the Connected App component that gives you control over who's logging in and how your mobile clients share images and links.

#### Analytics Security Implementation Guide

Analytics has different levels of security that your organization can implement to ensure that the right user has access to the right data.

#### Salesforce Data Access in Analytics

Analytics requires access to Salesforce data when extracting the data and also when the data is used as part of row-level security. Analytics gains access to Salesforce data based on permissions of two internal Analytics users: Integration User and Security User.

#### Set Up a Whitelist of Trusted Sites for Embedded Analytics Dashboards

Specify your trusted sites in the Analytics whitelist, you can include embedded Analytics dashboards in websites and apps outside of Salesforce servers.

#### Einstein Analytics Encryption

The Einstein Analytics Encryption solution enhances security for Salesforce customers by extending encryption capabilities to the data at rest that is stored on the Salesforce file system.

# Enable Preview Thumbnails for All Lenses and Dashboards

Make it easier for users to find their lenses and dashboards on the home page and on app pages. Replace the generic icons with preview thumbnails of the contents of all lenses and dashboards, including those assets that have row-level security restrictions.

If no security predicate is defined for a dataset, then preview thumbnails always appear. If a security predicate is defined, then preview thumbnails don't show unless this setting is enabled. With the setting enabled, preview thumbnails appear for all assets.

- (1) Important: Even if row-level security applies to the dataset used by a lens or dashboard, the preview thumbnail could expose data from restricted rows. Row-level security restrictions take effect only after you've clicked through to the lens or dashboard.
- 1. From Setup, enter *Analytics* in the Quick Find box, then select **Settings**.
- 2. Select Show preview thumbnails for lenses and dashboards with row level-security enabled.
- 3. Click Save.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

### **USER PERMISSIONS**

To modify settings:

Manage Analytics

# **Enable Analytics for Communities**

Securely share Analytics apps with community partner and customer users.



**Note:** Only users with a Customer Community Plus or Partner Community license can use this feature. This feature is supported in communities but not in portals.

To enable Analytics for sharing with Communities, complete the following steps.

- 1. From Setup, enter *Analytics* in the Quick Find box, then select **Settings**. Select Enable Analytics for Communities.
- **2.** Assign your community members the Analytics for Communities permission set license.
- **3.** Create a permission set that includes the "View Analytics on Communities pages" permission and assign it to your community members.
- **4.** Continue setting up Analytics for Communities with Step 2 in .Share Analytics with Communities.

# **EDITIONS**

Available in: Salesforce Classic and Lightning Experience.

Available for an extra cost in: **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in: **Developer** Edition

# **USER PERMISSIONS**

To modify settings:

Manage Analytics

To view Analytics dashboards and lenses:

 View Analytics on Communities pages

# **Enable Conversational Exploration (Beta)**

Quickly query and visualize data in guided, natural language conversations.



**Note:** As a beta feature, Conversational Exploration is a preview and isn't part of the "Services" under your master subscription agreement with Salesforce. Use this feature at your sole discretion, and make your purchase decisions only on the basis of generally available products and features. Salesforce doesn't guarantee general availability of this feature within any particular time frame or at all, and we can discontinue it at any time. This feature is for evaluation purposes only, not for production use. It's offered as is and isn't supported, and Salesforce has no liability for any harm or damage arising out of or in connection with it. All restrictions, Salesforce reservation of rights, obligations concerning the Services, and terms for related Non-Salesforce Applications and Content apply equally to your use of this feature. You can provide feedback and suggestions for Conversational Exploration in the Einstein Analytics IdeaExchange in the Trailblazer Community.

To set up Analytics to explore data using conversations, complete the following steps.

- 1. From Setup, enter Analytics in the Quick Find box, then select Settings.
- 2. Select Enable Conversational Exploration (Beta).
- 3. Click Save.

# **EDITIONS**

Available in: Salesforce Classic and Lightning Experience.

Available for an extra cost in: **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in: **Developer** Edition

# **USER PERMISSIONS**

To view visualizations:

Use Analytics

# **Enable the Analytics REST API**

You can access Analytics datasets and lenses programmatically using the Analytics REST API. Selecting this option overrides the "APIEnabled" permission for individual users and gives all Analytics users (including Community users) access to the API.

- 1. From Setup, enter *Analytics* in the Quick Find box, then select **Settings**.
- 2. Select Grant all users access to Wave API.
- 3. Click Save.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To modify settings:

Manage Analytics

# Grant Users Access to the Dashboard Designer and Classic Designer

To grant users access to either dashboard designer, assign each of them the "Create and Edit Analytics Dashboards" user permission. For users to access the dashboard designer, the **Enable dashboard designer** setup option must also be enabled, which it is by default.

If dashboard designer is disabled, complete the following tasks to enable it.

- 1. From Setup, enter Analytics in the Quick Find box, then select Settings.
- 2. Select Enable dashboard designer, and then click Save.
- **3.** For each user that builds dashboards, assign the "Create and Edit Analytics Dashboards" user permission to them.
  - Each user has a choice whether to use the classic designer or dashboard designer for each dashboard.

SEE ALSO:

**Build Analytics Dashboards** 

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To access the dashboard designer or classic designer:

 Create and Edit Analytics Dashboards

#### **Enable Dashboard Views**

Enable this feature to allow each Einstein Analytics user to create their own unique views of a dashboard. By default, this feature is enabled for your org. If the feature is disabled and you re-enable it, all previously created views are available.

- 1. From Setup, enter *Analytics* in the Quick Find box, then select **Settings**.
- 2. Select Enable Wave dashboard saved views, and then click Save.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

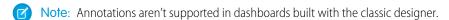
Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **Enable Annotations on Dashboard Widgets**

Annotate dashboard widgets with comments posted in the dashboard and in Chatter.

To enable annotations, complete the following steps.

- 1. From Setup, enter Feed Tracking in the Quick Find box, and then select Feed Tracking under Chatter.
- 2. Scroll down and select **Analytics Asset**.
- 3. Select Enable Feed Tracking.
- 4. Click Save.



SEE ALSO:

Collaborate with Dashboard Annotations

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

## **USER PERMISSIONS**

To modify settings:

Manage Analytics

# **Enable Downloading from Analytics**

Enable users to download the results from lens explorations and dashboard widgets as images (.png), Microsoft® Excel® (.xls), or comma-separated values (.csv) files.



Note: Complete dashboards can be downloaded only as images.

To set up users to download data from Analytics, complete the following steps.

- From Setup, enter Permission Sets in the Quick Find box, and then select Permission Sets under Manage Users.
- **2.** Select the Analytics Cloud Permission Set where you want to add the permission, and then select **System Permissions**.
- 3. Select Download Analytics Data.
- 4. Click Save.

SEE ALSO:

Download Images and Filtered Data

# Connected App for Analytics on Mobile

Install the Salesforce Analytics App Package to allow your mobile clients to easily connect to your org. This package contains the Connected App component that gives you control over who's logging in and how your mobile clients share images and links.

- **1.** While logged in as an admin, navigate to https://login.salesforce.com/packaging/installPackage.apexp?p0=04tB0000000DKTA.
- 2. Select Install for All Users.

If you install the Connected App only for certain roles, then only those clients are subject to your policies.

- **3.** After clicking **Done**, click the Salesforce Analytics App Package and then **View Components**.
- **4.** Select iOS or Android. To configure policies and other settings, click **Edit**. When you are finished, save your changes.

For more information about Connected App settings, see Edit a Connected App.

**5.** If you want to disable sharing options for mobile users, click **New** in the Custom Attributes section.

All sharing options are enabled by default. To disable an option, add its attribute key and enter "false" for the attribute value. See the table for the supported attribute keys.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To modify settings:

Manage Analytics

# EDITIONS

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

#### **USER PERMISSIONS**

To install and configure Connected App:

Manage Analytics

| Attribute Key           | Mobile clients can share            | Mobile Device |
|-------------------------|-------------------------------------|---------------|
| SHARE_IMAGE_AIRDROP     | Images via AirDrop                  | iOS           |
| SHARE_IMAGE_ CAMERAROLL | Images to Camera Roll               | iOS           |
| SHARE_IMAGE_ OPEN       | Images to other apps and activities | iOS           |
| SHARE_IMAGE_ S1         | Images to Salesforce                | iOS           |
| SHARE_IMAGE_ EMAIL      | lmages via email                    | iOS           |

| Attribute Key         | Mobile clients can share  | Mobile Device   |
|-----------------------|---|-----------------|
| SHARE_LINK_NFC        | Links via Near Field Communication (NFC)                            | Android         |
| SHARE_LINK_BLUETOOTH  | Links via Bluetooth   | Android         |
| SHARE_LINK_AIRDROP    | Links via AirDrop   | iOS             |
| SHARE_LINK_ CLIPBOARD | Links to Clipboard  | iOS and Android |
| SHARE_LINK_ S1        | Links to Salesforce   | iOS and Android |
| SHARE_LINK_EMAIL      | Links via email   | iOS and Android |
| SPOTLIGHT_SEARCH      | Mobile clients can see Analytics assets in Spotlight search results | iOS             |

- Note: To apply custom attributes to connected users, you can revoke them and ask them to reconnect.
- **6.** To view and control how mobile clients connect to your Analytics-enabled org, from Setup, enter *Connected Apps* in the Quick Find box, then select **Connect Apps OAuth Usage**.

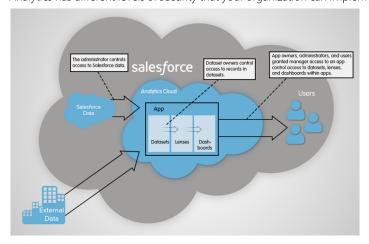
You can block user sessions, revoke individual users, and drill in to user details. For more information, see Monitoring Usage for a Connected App.

Note: For certificate-based authentication, users must set their desktop browsers to allow cookies.

For additional security, use Mobile Device Management (MDM) with the option to show only authorized hosts. The "OnlyShowAuthorizedHosts" key allows you to hide the "Add New Account" plus sign in the mobile app. For more information, see Using MDM with Salesforce Mobile SDK Apps.

# **Analytics Security Implementation Guide**

Analytics has different levels of security that your organization can implement to ensure that the right user has access to the right data.



• The administrator can implement object-level and field-level security to control access to Salesforce data. For example, the administrator can restrict access to prevent the dataflow from loading sensitive Salesforce data into datasets. This document describes how Analytics uses object-level and field-level security on Salesforce data and how to configure permissions on Salesforce objects and fields.

- Dataset owners can implement row-level security on each dataset that they create to restrict access to it's records. If a dataset does
  not have row-level security, users who have access to the dataset can view all records. This document describes how to configure
  row-level security on datasets and provides some sample implementations based on datasets created from Salesforce data and
  external data.
- App owners, administrators, and users granted manager access to an app control access to datasets, lenses, and dashboards within
  apps. This document describes the different levels of access for apps and how to share datasets, lenses, dashboards in an app with
  other users.



For complete information about implementing Analytics security, see Analytics Security Implementation Guide.

# Salesforce Data Access in Analytics

Analytics requires access to Salesforce data when extracting the data and also when the data is used as part of row-level security. Analytics gains access to Salesforce data based on permissions of two internal Analytics users: Integration User and Security User.

Analytics uses the permissions of the Integration User to extract data from Salesforce objects and fields when a dataflow job runs. Because the Integration User has View All Data access, consider restricting access to particular objects and fields that contain sensitive data. If the dataflow is configured to extract data from an object or field on which the Integration User does not have permission, the dataflow job fails.

When you query a dataset that has row-level security based on the User object, Analytics uses the permissions of the Security User to access the User object and its fields. The Security User must have at least read permission on each User object field included in a predicate. A predicate is a filter condition that defines row-level security for a dataset. By default, the Security User has read permission on all standard fields of the User object. If the predicate is based on a custom field, then grant the Security User read access on the field. If the Security User does not have read access on all User object fields included in a predicate expression, an error appears when you try to query the dataset using that predicate.



**Important**: Because Analytics requires the Integration User and Security User to access Salesforce data, do not delete either of these users.

#### IN THIS SECTION:

#### Control Access to Salesforce Objects and Fields

Analytics requires access to Salesforce data when extracting the data and also when the data is used as part of row-level security. Configure the permissions of the Integration User on Salesforce objects and fields to control the dataflow's access to Salesforce data. Configure the permissions of the Security User to enable row-level security based on custom fields of the User object.

# Control Access to Salesforce Objects and Fields

Analytics requires access to Salesforce data when extracting the data and also when the data is used as part of row-level security. Configure the permissions of the Integration User on Salesforce objects and fields to control the dataflow's access to Salesforce data. Configure the permissions of the Security User to enable row-level security based on custom fields of the User object.

When configuring permissions for the Integration User or Security User, make changes to a cloned version of the user profile.

1. From Setup, enter *Profiles* in the Quick Find box, then select **Profiles**, and then select the user profile.

For the Integration User, select the Analytics Cloud Integration User profile. For the Security User, select the Analytics Cloud Security User profile.

- 2. Click Clone to clone the user profile.
- **3.** Name and save the cloned user profile.
- 4. Click Object Settings.
- **5.** Click the name of the Salesforce object.
- 6. Click Edit.
  - **a.** To enable permission on the object, select **Read** in the Object Permissions section.
  - **b.** To enable permission on a field of the object, select **Read** for the field in the Field Permissions section.
    - **3**

Note: You can't change the permissions on standard fields of the User object.

- **7.** Save the object settings.
- **8.** Assign the cloned user profile to the Integration User or Security User.
  - a. From Setup, enter Users in the Quick Find box, then select Users.
  - **b.** Select the user to which you want to assign the user profile.
  - c. Click Edit.
  - **d.** In the Profile field, select the user profile.
  - e. Click Save.
- **9.** Verify that the Integration User or Security User has the right permissions on fields of the objects.

# **USER PERMISSIONS**

#### To clone a user profile:

 Manage Profiles and Permission Sets

#### To edit object permissions:

 Manage Profiles and Permission Sets

AND

**Customize Application** 

# Set Up a Whitelist of Trusted Sites for Embedded Analytics Dashboards

Specify your trusted sites in the Analytics whitelist, you can include embedded Analytics dashboards in websites and apps outside of Salesforce servers.

To set up an Analytics whitelist, complete the following steps.

- From Setup, enter Whitelist in the Quick Find box, then select Whitelist under Analytics.
- 2. On the Whitelist for Embedding Dashboards page, click **New**.
- **3.** On the Whitelisted Site Edit page, enter the information for the site you want to add to the Analytics whitelist.
- 4. Click Save.

# **Einstein Analytics Encryption**

The Einstein Analytics Encryption solution enhances security for Salesforce customers by extending encryption capabilities to the data at rest that is stored on the Salesforce file system.

If digital data is in transit, currently being processed, or stored in memory, that data is considered to be in use. By contrast, digital data is considered at rest if it is stored physically in persistent storage

but is not currently in use. To encrypt data at rest and preserve functionality, Einstein Analytics Encryption services are built natively into the Einstein Analytics platform. The solution applies strong, probabilistic encryption on data stored at rest. Platform encryption is based on the Advanced Encryption Standard (AES) with 256-bit keys using CTR mode for every write.

All operations, including sort and group-by, function the same as without encryption (except for key management functions, as noted in this topic).

#### **How Einstein Analytics Encryption Works**

As a prerequisite to Einstein Analytics Encryption, you must be approved by the Einstein Analytics Encryption Product Manager. Your org must have a Shield Platform Encryption tenant secret. (Einstein Analytics Encryption uses PE key management, so it's not necessary to encrypt objects and fields in core Salesforce.)

When using Einstein Analytics with your encryption-enabled instance, data read from and written to disk is automatically encrypted with the unique key for your account. For more information about the encryption technology, refer to the Shield Platform Encryption Architecture white paper. To verify that encryption is enabled, go to the Analytics Settings page in the Setup UI.



# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To modify settings:

Manage Analytics

#### **Features**

All Einstein Analytics features are supported, with the following exceptions:

- Key export, Bring Your Own Key, key rotation, key revocation, and key import are available.
- Pre-existing data is not encrypted. Data that was in Einstein Analytics before encryption was enabled is not encrypted. If pre-existing data is imported from Salesforce objects through the dataflow, the data becomes encrypted on the next dataflow run. Other pre-existing data (such as CSV data) must be reimported to become encrypted. Although pre-existing data is not encrypted, it is still accessible and fully functional in its unencrypted state when encryption is enabled.

#### **Frequently Asked Questions**

**Is data encrypted in transit?** Yes. However, encryption in transit is different from encryption at rest. This feature covers encryption at rest.

Can Einstein Analytics bring in data encrypted with Shield Platform Encryption? Yes. Einstein Analytics reads platform encrypted data in the same way that any user reads platform encrypted data. The data is then written and encrypted in Einstein Analytics. It is not required that data be encrypted with Shield Platform Encryption to be encrypted in Einstein Analytics. It is only required that a Tenant Secret exist for the org.

Can I mask my data? No. Masking data is not currently available and it does not fall under the Einstein Analytics scope.

**Are the keys different for Shield Platform Encryption and Einstein Analytics Encryption?** Yes, although Shield and Einstein Analytics use the same key management technology, they use different keys.

**Do mobile dashboards still work with encryption?** Yes. All Einstein Analytics functionality, including support for mobile devices, works with encryption enabled. All data stored on mobile (mainly JSON code and thumbnails) is AES 256 encrypted.

**Is there any impact on application performance?** The Einstein Analytics Encryption solution is designed to have at most a minimal performance impact on your Einstein Analytics application experience.

# **Analytics Requirements**

This section provides requirements for using Analytics.

## **Supported Browsers**

Browser support is available for Microsoft® Edge, Microsoft Internet Explorer® version 11, and the most recent stable versions of Mozilla® Firefox® and Google Chrome™.



Note: Analytics isn't supported on Apple Safari.

## Screen Resolution

The minimum screen resolution required to support all Salesforce features is 1024 x 768 pixels.

# **Supported Mobile Devices**

**Analytics for iOS**: Apple® devices running iOS 10 or later.

**Analytics for Android**: Android<sup>™</sup> devices running Android 5 or later.

# **Analytics Limits**

This section describes Analytics limits.

## **API Call Limits**

These limits apply to all supported editions.

| Limit  | Value  |
|--|--------|
| Maximum concurrent Analytics API calls per org | 100    |
| Maximum Analytics API calls per user per hour  | 10,000 |

# **Dataset Storage Limits**

These limits apply to all supported editions and are contractual, not technical. The licensee agrees to strictly monitor its total number of data rows. Use of a prebuilt Analytics app license, such as the Sales Analytics app license, does not increase the data limit for the Analytics Platform license.

| Limit   | Value  |
|---|--|
| Maximum number of rows for all registered datasets combined | 100 million with Einstein Analytics Growth or Einstein Analytics<br>Plus   |
|   | 25 million with Sales Analytics or Service Analytics   |
|   | 50 million with Event Monitoring Analytics   |
|   | 25 million with B2B Marketing Analytics  |
|   | 25 million with Einstein Analytics for Financial Services Cloud  |
|   | 25 million with Einstein Analytics for Health Cloud  |
|   | +100 million per Additional Data Rows license  |
|   | Whether the row limits are additive depends on the SKUs for your org. Examples:  |
|   | • The Einstein Analytics Growth and Einstein Analytics Plus SKUs include Sales Analytics and Service Analytics, so the total row limit is 100 million.   |
|   | • If your org has an Einstein Analytics Growth or an Einstein Analytics Plus SKU and then obtains an additional SKU for Sales Analytics or Services Analytics, the limit increases to 125 million. |
|   | <ul> <li>If your org has an Einstein Analytics Growth or an Einstein<br/>Analytics Plus SKU and adds the Event Monitoring SKU, the<br/>total row limit becomes 150 million.</li> </ul>             |
| Maximum number of fields in a dataset                       | 5,000 (including up to 1,000 date fields)  |
| Maximum value for each numeric field in a dataset           | 36,028,797,018,963,967   |
| Minimum value for each numeric field in a dataset           | -36,028,797,018,963,968  |

#### **Dataflow Limits**

Analytics uses the bulk API, but this does **not** count towards Salesforce bulk API limits. The dataflow submits a separate bulk API call to extract data from each Salesforce object. The dataflow uses a batch size of 100K to 250K, depending on whether the dataflow or the bulk API chunks the data. As a result, to extract 1 million rows from an object, the dataflow creates 4-10 batches.

| Limit  | Value |
|--|-------|
| Maximum number of dataflows definitions (with replication enabled) | 35    |
| Maximum number of dataflow runs in a rolling 24-hour period        | 40    |



Note: Dataflow and recipe runs that take less than 2 minutes, and replication, don't count toward the 24-hour dataflow run limit. However, you can't run any of these data jobs, regardless of size, if you've already reached the 24-hour run limit.

#### **ELT Job Limits**

ELT jobs include user dataflows, CSV uploads, dataset recipes, and replication.

| Limit  | Value     |
|--|-----------|
| Timeout for ELT jobs that have been scheduled but not executed | 5 minutes |

#### **Replication Limits**

If you are currently extracting more than 50 objects in your dataflows, contact Salesforce Customer Support before you enable replication.

| Limit   | Value |
|---|-------|
| Maximum number of objects that can be enabled for replication | 100   |

#### **Trending Data Limits**

Trended datasets count toward the overall Analytics platform limits, including total number of rows.

| Limit  | Value      |
|--|------------|
| Maximum number of trended datasets per user              | 5          |
| Maximum number of rows per snapshot                      | 100,000    |
| Maximum number of rows for all monthly snapshots per org | 40 million |

#### **Lens and Dashboard Creation Limits**

These limits apply to the creation of lenses and dashboards.

| Limit                                     | Value   |
|---|---|
| Character limit for description fields    | 1000  |
| Default number of rows in a compare table | 2000 (To set a different value, use the SAQL limit statement) |

| Limit                                    | Value  |
|--|--|
| Default number of rows in a values table | 100 (To set a different value, use the SAQL limit statement) |
| Maximum file size for geojson            | 10 MB  |
| Maximum number of notifications per user | 5  |

# **Story Creation Limit**

This limit applies to the creation of stories in Einstein Analytics Plus.

| Limit                | Value   |
|----------------------|---|
| Story creation limit | 500 (To purchase additional stories, purchase Einstein Analytics Plus - Additional Stories (1,000). Additional stories are purchased in blocks of 1,000.) |

# **Prebuilt Analytics App Limits**

Each Analytics app limits custom object support to no more than 10 custom objects and one dataflow for each org that implements the app. These are contractual, not technical, limits.

#### **External Data Limits**

| Limit   | Value                                     |
|---|---|
| Maximum file size per external data upload  | 40 GB                                     |
| Maximum file size for all external data uploads in a rolling 24-hour period                   | 50 GB                                     |
| Maximum number of external data jobs per dataflow that can be run in a rolling 24-hour period | 50  |
| Maximum number of characters in a field   | 32,000                                    |
| Maximum number of fields in a record  | 5,000 (including up to 1,000 date fields) |
| Maximum number of characters for all fields in a record                                       | 400,000                                   |

# **Query Limits**

Trended datasets count toward the overall Analytics platform limits, including total number of rows.

| Value           |
|-----------------|
| 50 per platform |
| 10              |
| 10,000*         |
|                 |
|                 |

| Limit         | Value     |
|---------------|-----------|
| Query timeout | 2 minutes |

\*The maximum results returned by a query varies based on the step type that contains the query and whether the query is executed from a desktop or the mobile app.

| Step Type                       | Applies to Dashboard Designer Dashboards? | Applies to Classic<br>Designer<br>Dashboards? | Desktop Default<br>Limit        | Mobile Default Limit   |
|---------------------------------|---|---|---------------------------------|--|
| aggregate                       |   | •   | 2,000                           | 100 if the step contains a single grouping, 500 if it contains multiple groupings. |
| aggregateflex                   | 0   |   | 2,000                           | 500  |
| grain (for values tables only)  | <b>Ø</b>                                  | •   | 100                             | 100  |
| multi (for compare tables only) |   | <b>Ø</b>                                      | 2,000                           | 2,000  |
| saql                            | 0   |   | 2,000                           | 2,000  |
| soql                            | <b>Ø</b>                                  |   | See SOQL and SOSL<br>Reference. | See SOQL and SOSL<br>Reference   |
| static                          |   | <b>⊘</b>                                      | n/a                             | n/a  |
| staticflex                      | 0   |   | n/a                             | n/a  |



Tip: To see the limit for a given step, click in the explorer. If it's not set, Analytics returns up to 10,000 results. To change the limit, edit the SAQL or SOQL query. The higher you increase the limit, the longer the query might take. For more information about SAQL queries, see the *Analytics SAQL Reference*. For information about SOQL queries, see *Salesforce Object Query Reference*.

The limit only impacts the number of records returned for display. It doesn't impact calculations across all dataset records. For instance, a query groups by account name and the dataset contains one million account names. With a limit of 20, Analytics only returns 20 results for display, but the summary row adds up all one million records.

#### **Analytics Developer Addition Limits**

Analytics is built on the Lightning platform and is subject to the Lightning platform limits. For example, the SOQL query limit (20,000 characters) controls the number of fields from which the sfdcDigest transformation can extract data. If you exceed a Lightning Platform limit, an error occurs. See Lightning platform limits.

| Limit                                | Value   |
|--------------------------------------|---------|
| Maximum number of data rows          | 250,000 |
| Maximum number of concurrent queries | 5       |

# **Analytics Limitations**

Analytics differs from other Salesforce features in some ways.

#### **General Limitations**

This section describes Analytics limitations.

# **Update Schedule**

All customers receive Analytics updates on the same schedule, regardless of instance.

#### Localization and Internationalization

Analytics has been localized with the following exceptions.

- We do not support right-to-left languages, such as Arabic and Hebrew.
- A subset of error messages is available only in English.
- The mobile iOS app includes only English versions of sample datasets and dashboards.

Analytics provides internationalization support with the following limitations.

- You must set both locale and language to see translated labels.
- Data within datasets is not modified for localization or internationalization.
- Each dataset can have a single locale specified in the metadata. The metadata locale is not overridden by individual user locale settings. All users see the same date, time, and number formats, and dimension names, regardless of their own locale and language settings.
- Search in filters is not case-sensitive.
- Multicurrency is not supported. When Analytics extracts your organization's default currency, it uses the currency for monetary values and doesn't convert to another currency.

#### **SAQL Query Limitations**

You can't filter, group, or sort based on the time fields generated for a date field, like <date\_field>\_Hour, <date\_field>\_Minute, and <date\_field>\_Second.

#### Sales Analytics Limitations

These limitations apply to Sales Analytics.

## Sales AnalyticsData Requirements

Sales Cloud data must meet the following requirements for Sales Analytics dashboards to function correctly:

- Use standard sales objects.
- Have at least one event and one task connected with an opportunity.
- Enable history tracking for Amount, Stage, and CloseDate fields on the Opportunities object.
- Cases must be connected to Accounts if you choose to import Cases data to Sales Analytics using the configuration wizard.
- There are two requirements if you choose to import Leads data to Sales Analytics using the configuration wizard.
  - 1. At least one lead must be converted to an opportunity.
  - 2. The lead must be connected to an account.

- There are two requirements if you choose to import Campaigns data to Sales Analytics using the configuration wizard.
  - 1. At least one opportunity must be connected to a campaign.
  - 2. At least one campaign member must be connected to a campaign.
- There are two requirements if you choose to import opportunity record types to Sales Analytics using the configuration wizard.
  - 1. At least one opportunity record type must be defined.
  - 2. The opportunity record type must be connected to at least one opportunity.

#### Sales Analytics Support for Salesforce Objects and Fields

Sales Analytics supports all Salesforce standard and custom objects and data. To add custom objects or additional fields not included when you first create the app, you need to update the Sales Wave dataflow. For details see Create Datasets with the Dataflow.

When you first create the app it includes only a predefined set of objects and fields. Sales Analytics creates a dataflow that exposes selected fields from the following standard Salesforce objects:

- Accounts
- Users
- Roles
- Opportunities
- Products (Opportunities line item)
- Tasks
- Events

The fields provided are determined by the answers you provide when you create the app using the built-in configuration wizard.

Sales Analytics supports standard and custom fields on **standard Sales Cloud objects**. The fields provided are determined by the answers you provide when you create the app using the built-in configuration wizard.

#### Sales Analytics Support for Non-Salesforce Data

Sales Analytics does not support external data sources except a CSV file that contains quota data at the user level. Importing other external data requires an extra license. See your Salesforce representative for details.

To include data about quotas in Sales Analytics, you must upload a CSV file with the details. For more information, see Collaborative Forecasting and Quotas Data in Sales Analytics.

## **Other Contractual Sales Analytics Limitations**

The Sales Analytics Apps license does not support use of Einstein Analytics platform bulk actions or Apex steps functionality. This limitation is contractual, not technical. Licensee agrees to strictly monitor its use of Analytics platform features.

## **Service Analytics Limitations**

The following limitations apply to Service Analytics.

# **Service Analytics Data Requirements**

Service Cloud data must include at least one each of the following for Service Analytics dashboards to function correctly: Events, tasks, closed cases, or published articles attached to a case or an opportunity. It also requires that your org have at least one contact ID associated with a case.

Custom formula fields on the Cases object must exist or be created for the SLA missed (text) and FCR (Boolean) fields.

#### Service Analytics Support for Salesforce Objects and Fields

Service Analytics supports all Salesforce standard and custom objects and data. When you first create the app by default it includes only a predefined set of objects and fields. The app creates a dataflow that exposes selected fields from the following Salesforce objects:

- Account
- Cases
- Contact
- User
- UserRole
- Task

Service Analytics also uses fields from the following options depending on the answers you select in the configuration wizard:

- Customer satisfaction (CSAT)
- Knowledge
- Business hours
- Case history
- Case record types
- Queues
- Opportunities
- Opportunity record types
- Events
- Telephony
- Live Agent
- Omni-Channel

Service Analytics supports standard and custom fields on standard Salesforce objects. The fields provided are determined by the answers you provide when you create the app using the built-in configuration wizard.

Service Analytics limits custom objects support to no more than 10 custom objects for each org that implements Service Analytics. This limitation is contractual, not technical.

To add custom objects or extra fields not included when you first create the app, you must update the Service Analytics dataflow. For details, see Create Datasets with a Dataflow.

## **More Service Analytics Limitations**

Service Analytics does not support external data sources or registering new datasets from the app-generated dataflow.

Including CSAT score in dashboards/dataflow is optional. The app configuration wizard lets you associate CSAT from a custom case field or Custom Object associated to the Cases object.

You must manually add any security predicates or other dataset filters to the app dataflow.

The app does not support multi-hierarchy (team/manager) when you create it. You must manually add that functionality.

The Knowledge Usage dashboard currently reports on a single Article Type, which you select when you use the configuration wizard.

## **Adoption Analytics Limitations**

These limitations apply to Adoption Analytics.

- Datasets created for the app count against row limits for your Analytics license.
- Includes only Analytics logs. For any Salesforce logs, use Event Monitoring.
- The first time you use Adoption Analytics, it may take 24 hours for data to collect in event logs before it can be registered in the app's datasets and dashboard.

# Field-Level Security

Field-level security isn't available for external data that is uploaded via files. Field-level security that was implemented in the original database or Salesforce object isn't preserved when the data is loaded into an Analytics dataset. For more information, see the Analytics Security Implementation Guide.

Set Salesforce field-level security to enable the Analytics Integration User to see all fields used in your app—default fields and those selected in the configuration wizard. Integration users run the dataflow, and if they don't have proper field-level security permissions, the dataflow fails.

#### Dashboards on Mobile Devices

To view an Analytics dashboard on a mobile device, use the Analytics mobile app. Mobile browsers are not supported for viewing Analytics Dashboards.

SEE ALSO:

Tradeoffs and Limitations of Shield Platform Encryption Limitations of Analytics on iPhone® and iPad® Limitations of Analytics on Android Devices

# Set Up the Analytics Platform with Licenses Purchased Before October 20, 2015

If you purchased an Analytics Cloud Builder or Analytics Cloud Explorer license before October 20, 2015, you can continue to use your licenses to set up the Analytics plaform for users in your organization or you can migrate to the new single-user Analytics Platform license.



(1) Important: If you're migrating from the previous Analytics Cloud Builder or Analytics Cloud Explorer platform licenses to the single-user Sales Analytics Apps license, read Migrating From Analytics Licenses Purchased Before 10/20/2015 to New Analytics Platform Licenses.

# The Analytics Platform License

An Analytics license purchased before October 20, 2015, enables you to turn on Analytics for your organization. Each previous Analytics Platform license is contractually limited to a maximum of 400 users. If you need more than 400 users, you can purchase additional Analytics licenses.

Each previous Analytics license enables you to:

- Store up to 250,000,000 rows in your final registered datasets.
- Run up to 50 concurrent gueries in Analytics.

# The Analytics Cloud Permission Set License

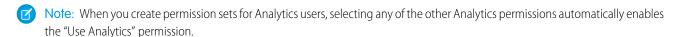
Each user needs one of two Analytics permission set licenses to use the product. The permission set license defines what user permissions can be assigned to the user. The administrator assigns permission set licenses to users.

For Analytics licenses sold before October 20, 2015, Salesforce provided the following permission set licenses:

- Analytics Cloud Builder permission set license enables users to access all Analytics features.
- Analytics Cloud Explorer permission set license enables users to upload external data to Analytics and explore data.

Here are Analytics user permissions included with each permission set license.

| User Permission                        | Included in Explorer or Builder Permission Set License? | What It Enables   |
|--|---|---|
| "Create and Edit Analytics Dashboards" | Builder only  | Creating and editing Analytics dashboards.  |
| "Create Analytics Apps"                | Builder only  | Creating and sharing Analytics applications.  |
| "Edit Analytics Dataflows"             | Builder only  | Downloading, uploading, starting, stopping, and rescheduling the dataflow. Viewing dataflow and system jobs in the data monitor.  |
| "Manage Analytics"                     | Builder only  | Accessing all Analytics features. Provides Analytics administrator-level capabilities.  |
| "Upload External Data to Analytics"    | Builder and Explorer                                    | Uploading external data to Analytics to create a dataset. Viewing dataflow and system jobs in the data monitor.   |
| "Use Analytics"                        | Builder and Explorer                                    | Using Analytics, and viewing the datasets, lenses, and dashboards that the user has permission to view. Automatically enabled when you select any other Analytics permission. |



You can assign previous Analytics permission set licenses along with any of the following Salesforce user licenses:

- Lightning Platform (app subscription)
- Lightning Platform (one app)
- Full CRM
- Salesforce Platform
- Salesforce Platform One

## SEE ALSO:

Migrating From Analytics Licenses Purchased Before 10/20/2015 to New Analytics Platform Licenses

# Migrating From Analytics Licenses Purchased Before 10/20/2015 to New Analytics Platform Licenses

To complete migration from previous Analytics Cloud Builder and Analytics Cloud Explorer licenses purchased before October 20, 2015, to the new Analytics Platform license, you may need to set up Analytics users in your organization with new permission sets.

When Salesforce provisions your organization with the new Analytics Platform license, you may have to set up some users with the new license.

- Analytics Cloud Builder license users. Users who access Analytics with the Analytics Cloud Builder license should be able to continue to use the Analytics platform without any additional setup. The Builder license is simply renamed *Analytics Platform*, and you'll see that permission set license in Salesforce Setup.
- Analytics Cloud Explorer license users. During the new license provisioning process,
  Salesforce may remove the Analytics Cloud Explorer license from your org. If that's the case,
  you'll see the new Analytics Platform license instead of the Explorer license and you have to
  set up users with that license. If the Explorer permission set license is still visible, you do not have to repeat the setup process for
  Explorer users.

If users in your organization require you to set them up with the new Analytics Platform license—even if they used Analytics with a previous license—follow the steps in Analytics Platform Setup on page 63. You need to assign them the new permission set license, create one or more new permission sets, and assign the permission sets to users.

# Collaborative Forecasting and Quotas Data in Sales Analytics

Sales Analytics gives you a choice for how to include your team's quotas depending on whether you use the Sales Cloud Collaborative Forecasts feature to store quotas data.

You have the following options for including quotas data in Sales Analytics.

#### **Table 1: Sales Analytics Quotas Data Options**

| Option | Sales Cloud<br>Settings  | Configuration Wizard Settings   | Additional Setup<br>Requirements  |
|--------|--|---|---|
| 1      | <ul> <li>Sales Cloud         Collaborative         Forecasts enabled     </li> <li>Collaborative         Forecasts includes forecast quota data.     </li> </ul> | Select Collaborative<br>Forecasting in first<br>wizard screen that lets<br>you add objects. | None. Sales Analytics<br>automatically adds<br>quota data from the<br>Forecasts object.                     |
| 2      | <ul> <li>Sales Cloud         Collaborative         Forecasts enabled</li> <li>Collaborative         Forecasts does not include forecast quota data.</li> </ul>   | Select Collaborative<br>Forecasting in first<br>wizard screen that lets<br>you add objects. | Create .CSV file with<br>quotas data, upload to<br>Analytics, rerun<br>dataflow. See<br>instructions below. |

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To create and manage Analytics apps:

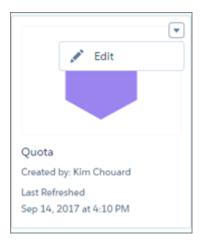
- Manage Analytics Templated Apps
- Edit Analytics Dataflows

| Option | Sales Cloud Settings                                      | Configuration Wizard<br>Settings  | Additional Setup<br>Requirements  |
|--------|---|---|---|
| 3      | Sales Cloud Collaborative<br>Forecasts <i>not</i> enabled | No setting available. Wizard does not give you the option of adding Collaborative Forecasts data. | Create .CSV file with quotas data, upload to Analytics, rerun dataflow. See instructions below. |

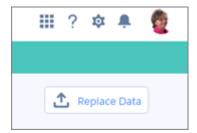
Wizard settings are optional, depending on whether you want to include Sales Cloud Collaborative Forecasts data in your app.

With Option 1, Sales Analytics automatically adds quotas data to your app and its dashboards. With Options 2 and 3, add quotas data to your app by following these instructions.

- Note: When you work with .CSV files you want to import to Sales Analytics, create and open them using only a UTF-8-compliant text editor. Opening them in Microsoft Excel or other spreadsheet software reformats .CSV files and makes them unusable in Sales Analytics
- (1) Important: When you create the .CSV file, be sure it contains the following fields, in this order, with exactly these names. Field names are case-sensitive:
  - 1. StartDate (in yyyy-mm-dd format)
  - 2. QuotaAmount
  - 3. OwnerName
  - 4. Username
- 1. Create a .CSV file to include the fields just described, that is StartDate (in yyyy-mm-dd format, QuotaAmount, OwnerName, Username. For an example, see Sales Analytics Example .CSV File.
- **2.** Save the file to a location that you can easily remember.
- **3.** In Salesforce, go to the Analytics home page and find the Quota dataset.
- 4. Click the arrow at the upper right corner of the dataset panel and select Edit.



5. Salesforce displays the dataset editing screen for the Quota dataset. Look for **Replace Data** in the upper right corner and click it.



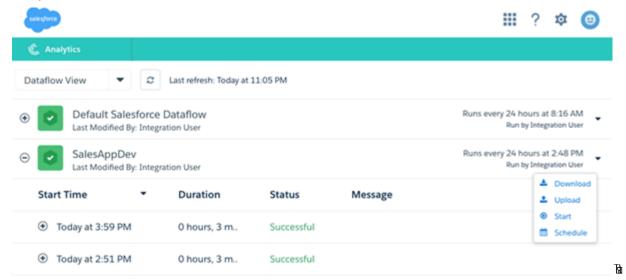
- **6.** In the dialog box that opens, navigate to the .CSV file you created in Step 1, and double-click it.
- 7. Click **Next** to open the Replace Dataset Data page.
- **8.** If your fiscal period is different than calendar period, that is if it starts on a date other than January 1, update the Quota Metadata file. If your fiscal period starts on January 1, skip to the next step.
  - a. Copy the JSON from Sales Analytics App Quota Dataset JSON File and paste it into a text editor of your choice.
  - **b.** Change the value of "fiscalMonthOffset" from 4 to a number that represents the month your fiscal period starts. In Sales Analytics metadata, the numeral "0" stands for January, "1" stands for February, and so on up to "11," which stands for December. Save the file to your desktop.
  - **c.** In Analytics Studio, go to the Replace Dataset Data page and locate the Data Schema File area of the page. Click the arrow next to Quota JSON file, select Replace File, find the file you just saved and upload it to Analytics.
- **9.** On the Replace Dataset Data page, click **Next** to open the Edit Field Attributes page. The first column —QuotaAmount— should be selected. If not, select it. In the **Field Attributes** panel on the right, make sure **Field Type** is set to **Measure**.



- 10. Click Upload. You'll be asked to confirm that you want to replace the file. Click Replace to upload the file.
- **11.** After uploading your quota data, rerun the dataflow to update the dashboards.
  - **a.** Click the Gear menu at the upper right of the Sales Analytics screen and select Data Manager.
  - **b.** Select Dataflow view from the menu at the top left of the Data Manager screen.



**c.** Find your app; you may have to scroll down the page. Open the menu on the far right of the screen next to the app icon and name, and click



it. The dataflow assures that Sales Analytics has your company's latest sales data. You can learn more about dataflows from Schedule the Sales App Daily Dataflow.

# IN THIS SECTION:

Sales Analytics Example .CSV File

Here's an example of the .CSV file you create to update the Sales Analytics Quota (Target) dataset.

Sales Analytics App Quota Dataset JSON File

Use this file to update the Sales Analytics Quota dataset with your fiscal year start date if it's not January 1.

# Sales Analytics Example .CSV File

Here's an example of the .CSV file you create to update the Sales Analytics Quota (Target) dataset.

Note: This file is for example purposes only. Create a unique .CSV file with quota data for members of your team including the following fields:

- QuotaAmount
- StartDate
- OwnerName

#### Username

Save the .CSV file in UTF-8 format. Field names are case-sensitive and must appear in your file exactly as shown here.

(1) Important: Do not open the .CSV file with Microsoft Excel or another spreadsheet application, which can corrupt the file format.

See Collaborative Forecasting and Quotas Data in Sales Analytics on page 712.



```
QuotaAmount, StartDate, OwnerName, Username
1700000,2017-04-01,Laura Garza,trailhead002@isaweso.me
1700000,2017-05-01, Laura Garza, trailhead002@isaweso.me
1700000,2017-06-01, Laura Garza, trailhead002@isaweso.me
1700000,2017-07-01, Laura Garza, trailhead002@isaweso.me
1700000,2017-08-01, Laura Garza, trailhead002@isaweso.me
1700000,2017-09-01, Laura Garza, trailhead002@isaweso.me
1700000,2017-10-01, Laura Garza, trailhead002@isaweso.me
1700000,2017-11-01,Laura Garza,trailhead002@isaweso.me
1700000,2017-12-01, Laura Garza, trailhead002@isaweso.me
1700000,2018-01-01,Laura Garza,trailhead002@isaweso.me
1700000,2018-02-01, Laura Garza, trailhead002@isaweso.me
1700000,2018-03-01,Laura Garza,trailhead002@isaweso.me
1700000,2018-04-01, Laura Garza, trailhead002@isaweso.me
1700000,2017-04-01, Irene Kelley, trailhead011@isaweso.me
1700000,2017-05-01, Irene Kelley, trailhead011@isaweso.me
1700000,2017-06-01, Irene Kelley, trailhead011@isaweso.me
1700000,2017-07-01, Irene Kellev, trailhead011@isaweso.me
1700000,2017-08-01, Irene Kelley, trailhead011@isaweso.me
1700000,2017-09-01, Irene Kelley, trailhead011@isaweso.me
1700000,2017-10-01, Irene Kelley, trailhead011@isaweso.me
1700000,2017-11-01, Irene Kelley, trailhead011@isaweso.me
1700000,2017-12-01, Irene Kelley, trailhead011@isaweso.me
1700000,2018-01-01, Irene Kelley, trailhead011@isaweso.me
1700000,2018-02-01, Irene Kelley, trailhead011@isaweso.me
1700000,2018-03-01, Irene Kelley, trailhead011@isaweso.me
1700000,2018-04-01, Irene Kelley, trailhead011@isaweso.me
1700000,2017-04-01, Julie Chavez, trailhead012@isaweso.me
1700000,2017-05-01, Julie Chavez, trailhead012@isaweso.me
1700000 2017-06-01 Julie Chavez trailhead0120isaweso
```

# Sales Analytics App Quota Dataset JSON File

Use this file to update the Sales Analytics Quota dataset with your fiscal year start date if it's not January 1.

Copy the contents of this file into an editor of your choice and change the "fiscalMonthOffset" value (shown in **bold**) to the month your fiscal period begins. In metadata, the numeral "0" stands for January, "1" stands for February, and so on up to "11," which stands for December. In the code below, the number is set to "4", which stands for May. Use the number that represents the month your fiscal period begins. Then save the file and upload it to Sales Analytics following the instructions in Collaborative Forecasting and Quotas Data in Sales Analytics.

```
{
    "objects": [
```

```
{
        "connector": "CSV",
        "fullyQualifiedName": "Quota_csv",
        "label": "Quota.csv",
        "name": "Quota csv",
        "fields": [
                 "fullyQualifiedName": "QuotaAmount",
                "name": "QuotaAmount",
                "type": "Numeric",
                "label": "QuotaAmount",
                "precision": 18,
                 "defaultValue": "0",
                 "scale": 0
            },
                "fullyQualifiedName": "StartDate",
                "name": "StartDate",
                 "type": "Date",
                "label": "StartDate",
                "format": "yyyy-MM-dd",
 "fiscalMonthOffset": 4,
 "isYearEndFiscalYear": true
            },
                "fullyQualifiedName": "OwnerName",
                "name": "OwnerName",
                "type": "Text",
                "label": "OwnerName"
            },
                "fullyQualifiedName": "Username",
                "name": "Username",
                 "type": "Text",
                 "label": "Username"
            }
        ]
    }
]
```

# Integrate Your Data in Analytics

You can integrate Salesforce data and external data into Analytics to enable users to explore and visualize the data with explorer and designer. *External data* is data that resides outside of Salesforce, such as data from outside applications and spreadsheets.

When you load data into Analytics, you load it into datasets. A dataset is a collection of related data that is stored in a denormalized, yet highly compressed form. You can prepare data in a dataset to combine data from different sources, calculate new values, and clean data

You can use these tools to create datasets in Analytics.

|                          | Dataflow  | Connectors<br>with<br>Replication       | CSV Upload<br>Wizard | Analytics<br>Connector for<br>Excel | External Data<br>API           | Recipe                                |
|--------------------------|---|---|----------------------|-------------------------------------|--------------------------------|---------------------------------------|
| Data source              | Salesforce<br>objects; existing<br>datasets;<br>replicated data | Salesforce<br>objects; external<br>data | External data        | Microsoft Excel                     | External data                  | Existing datasets;<br>replicated data |
| Load data                | Yes   | Yes                                     | Yes                  | Yes                                 | Yes                            | No                                    |
| Prepare data             | Yes   | No                                      | No                   | No                                  | Yes                            | Yes                                   |
| Graphical user interface | Yes (dataflow<br>editor)  | Yes                                     | Yes                  | Yes                                 | No<br>(programmatic<br>access) | Yes                                   |
| Preview data             | No  | Yes                                     | Yes                  | Yes                                 | No                             | Yes                                   |
| Refresh data             | Schedule  | Schedule                                | Manual               | Manual                              | Manual                         | Schedule                              |

#### IN THIS SECTION:

#### Get to Know Datasets

A dataset is a collection of related data that is stored in a denormalized, yet highly compressed form.

#### Create Datasets with the Dataflow

You can use the dataflow to create one or more datasets based on data from Salesforce objects or existing datasets. A *dataflow* is a set of instructions that specifies what data to extract from Salesforce objects or datasets, how to transform the datasets, and which datasets to make available for querying. With a dataflow, you can manipulate the extracted data and override the metadata before you load it into a dataset. You can schedule the dataflow to run to keep the datasets up to date.

#### Bring Data into Analytics

There are two main steps involved in integrating your data: loading and preparing. Loading is the process of bringing data into Analytics from its source, in a form that can be either explored right away or prepared further for later exploration.

#### Prepare Data in Analytics

Data preparation is the process of transforming your data into a form that's meaningful and valuable to the people exploring it. This preparation can include combining data from different sources, calculating new values, and cleaning data so that it's consistent and meaningful. Analytics gives you two ways to prepare your data: dataflow and dataset recipes.

#### Manage Datasets

Edit a dataset to update its details or extended metadata, apply security, replace data, or restore it to a previous version.

# Get to Know Datasets

A dataset is a collection of related data that is stored in a denormalized, yet highly compressed form.

Analytics applies one of the following types to each dataset field:

#### Date

A date can be represented as a day, month, year, and, optionally, time. You can group, filter, and perform math on dates.

#### Dimension

A *dimension* is a qualitative value, like region, product name, and model number. Dimensions are handy for grouping and filtering your data. Unlike measures, you can't perform math on dimensions. To increase query performance, Analytics indexes all dimension fields in datasets.

#### Measure

A *measure* is a quantitative value, like revenue and exchange rate. You can do math on measures, such as calculating the total revenue and minimum exchange rate.

For each dataset that you create, you can apply row-level security to restrict access to records in the dataset.



**Attention:** Before you create a dataset, verify that the source data contains at least one value in each column. Columns with all null values won't be created in datasets and can't be referenced in dataflows, lenses, or dashboards. Consider providing a default value for null values, like "n/a" or "empty."

#### IN THIS SECTION:

## Numeric-Value Handling in Datasets

Analytics internally stores numeric values in datasets as long values. For example, it stores the number "3,200.99" with a scale of "2" as "320099". The user interface converts the stored value back to decimal notation to display the number as "3200.99."

## Null Measure Handling in Datasets

When you create or update a dataset, through your dataflow or a CSV upload for example, blank measure values in your data need to be replaced with concrete values. Analytics uses the default values specified in your dataflow or CSV metadata file to replace blank values. When null measure handling is enabled, you can specify these defaults using the special "null" value. When no default value is specified, Analytics replaces blanks with null values.

#### Date Handling in Datasets

When Analytics loads dates into a dataset, it breaks up each date into multiple fields, such as day, week, month, quarter, and year, based on the calendar year. For example, if you extract dates from a CreateDate field, Analytics generates date fields such as CreateDate\_Day and CreateDate\_Week. If your fiscal year differs from the calendar year, you can enable Analytics to generate fiscal date fields as well.

# Numeric-Value Handling in Datasets

Analytics internally stores numeric values in datasets as long values. For example, it stores the number "3,200.99" with a scale of "2" as "320099". The user interface converts the stored value back to decimal notation to display the number as "3200.99."

The maximum numeric value that can be stored in a dataset is 36,028,797,018,963,967 and the minimum numeric value is -36,028,797,018,963,968.



Warning: If a numeric value is not within this range, you might receive unexpected results. For example, if you try to load the value 3.7E-16 with a scale of 16 into a dataset, Analytics tries to store the value as 3700000000000000. However, because this value exceeds the maximum, Analytics fails to load the entire record. In addition, if you perform a query that aggregates measures—like sum or group by—and the resulting value exceeds the maximum, the value overflows and Analytics returns an incorrect result.

# Null Measure Handling in Datasets

When you create or update a dataset, through your dataflow or a CSV upload for example, blank measure values in your data need to be replaced with concrete values. Analytics uses the default values specified in your dataflow or CSV metadata file to replace blank values. When null measure handling is enabled, you can specify these defaults using the special "null" value. When no default value is specified, Analytics replaces blanks with null values.



**Note:** Null measure handling is enabled in orgs created after the Spring '17 release and can't be disabled. To enable this feature in other orgs, see Enable Null Measure Handling on page 99.

Null measure handling is important because it affects the results of certain calculations. Without null measure handling, Analytics replaces blanks in your data with zeros, and you can't specify nulls as default values in your dataflows. Consider this example of data with customer satisfaction scores, where some customers have not responded.

#### **Source Data**

#### **Dataset with Zeros for Blanks**

#### **Dataset with Nulls for Blanks**

| Customer     | CSAT |
|--------------|------|
| Customer 1   | 3    |
| Customer 2   |      |
| Customer 3   | 4    |
| Customer 4   |      |
| Customer 5   | 5    |
| Average CSAT | 4    |
| Min CSAT     | 3    |

| Customer     | CSAT |
|--------------|------|
| Customer 1   | 3    |
| Customer 2   | 0    |
| Customer 3   | 4    |
| Customer 4   | 0    |
| Customer 5   | 5    |
| Average CSAT | 2.4  |
| Min CSAT     | 0    |

| Customer     | CSAT |
|--------------|------|
| Customer 1   | 3    |
| Customer 2   | null |
| Customer 3   | 4    |
| Customer 4   | null |
| Customer 5   | 5    |
| Average CSAT | 4    |
| Min CSAT     | 3    |

Calculated values such as average and minimum are correct in the source data, but when blank values are replaced with zeros, the resulting calculations are incorrect. Here the zeros are included in the calculation. When the calculations are made using null measures, the average and minimum calculations are correct.

Null measure handling allows the use null values in these dataflow transformations.

| append            | Analytics can append datasets with different measure fields. For example, if one dataset has an Amount field that is not present in a second dataset, the new dataset created after the append has an Amount field containing nulls in rows from the second dataset. Without null measure handling, appending datasets is not possible when measure fields are different. |
|-------------------|---|
| augment           | When the key in the left dataset is null or has no match in the right dataset, Analytics appends columns from the right dataset and inserts nulls for dimensions and measures. Without null measure handling, Analytics inserts zeros for measures.   |
| computeExpression | The defaultValue attribute for a computed field accepts a value of null. For example:   |
|                   | <pre>"SAQLNode": {     "action": "computeExpression",     "parameters": {         "source": "extractOpp",         "mergeWithSource": true,         "computedFields": [</pre>  |

computeRelative

The defaultValue attribute for a computed field accepts a value of null. When a value can't be calculated, such as when previous () or next () has no value, Analytics uses this default. For example:

```
"computeTrending": {
        "action": "computeRelative",
        "parameters": {
            "partitionBy": ["OpportunityId"],
            "orderBy": [
                {
                     "name": "CreatedDate",
                     "direction": "asc"
                }
            ],
            "computedFields": [
                {
                     "name": "AmountPrev",
                     "defaultValue" : "null",
                     "expression": {
                         "sourceField": "Amount",
                         "offset": "previous()",
                         "default": "null"
                 }
```

dim2mea

The measureDefault parameter accepts a value of null. Analytics uses this value when it can't convert a dimension to a valid numeric value. When no default is specified, Analytics uses a value of null. For example:

```
"Create_Measure_From_Dimension": {
    "action": "dim2mea",
    "parameters": {
        "dimension": "StageVal__c",
        "measure": "StageValue",
        "measureDefault": "null",
        "source": "Extract_Opportunities"
    }
}
```

sfdcDigest

The defaultValue attribute for a field accepts a value of null. When no default is specified, Analytics uses a value of null. For example:

| Update |
|--------|
|--------|



Note: The delta transformation is not supported when null measure handling is enabled and dataflows containing delta transformations fail. Use computeRelative and computeExpression transformations instead in your dataflows, to calculate changes in measure values over time. For an example, see Enable Null Measure Handling on page 99.

#### IN THIS SECTION:

#### **Enable Null Measure Handling**

Null measure handling lets you specify "null" default values in your dataflows and CSV uploads. When no default value is specified, Analytics replaces blanks with null values in your datasets.

## **Enable Null Measure Handling**

Null measure handling lets you specify "null" default values in your dataflows and CSV uploads. When no default value is specified, Analytics replaces blanks with null values in your datasets.



**Note**: Null measure handling is enabled in orgs created after the Spring '17 release and can't be disabled.

To enable this feature in other orgs, first contact Salesforce Customer Support to evaluate your org and determine what additional steps you might need to take.

# **USER PERMISSIONS**

To enable null measure handling:

Customize Application

Additional steps may be necessary because null measure handling can't retroactively change zeros to nulls, if those zeros have previously replaced blank values. This behavior can result in datasets containing a mixture of zeros coming explicitly from the source data, zeros replacing blank values, and nulls. Aggregate calculations in such datasets are incorrect.

When Salesforce makes null measure handling available in your org, you can enable it from Setup. Enter *Analytics* in the Quick Find box, then click **Settings**. Select **Enable null measure handling in Analytics**, and then click **Save**.

Customer Support may recommend that you take one or more of these steps, after enabling null measure handling.

1. Update your existing dataflow definition files to use null instead of 0 in defaultValue attributes for measure fields in these transformations.

| computeExpression | defaultValue: "null"   |
|-------------------|------------------------|
| computeRelative   | defaultValue: "null"   |
| dim2mea           | measureDefault: "null" |
| sfdcDigest        | defaultValue: "null"   |

- 2. Create new instances of long-lived datasets used as a source for dataflows, using a defaultValue of null for measure fields. Long-lived datasets are typically reference datasets that are not updated through a dataflow and used to augment data in other datasets. For example, you might use a geolocation dataset to augment lead information based on zip codes.
- **3.** If you have incrementally built datasets in which the source data is no longer available, use a custom dataflow to manually convert 0 values to null.
  - Incrementally built datasets are datasets that are created over time by appending rows, such as logs.

**4.** Reimplement delta transformations in your dataflows, using computeRelative and computeExpression transformations. The delta transformation is not supported when null measure handling is enabled and dataflows containing delta transformations fail.

In this example, the delta transformation on the left calculates the difference between an opportunity amount and its previous amount. The computeRelative and computeExpression transformations on the right respectively calculate the previous amount and its difference to the current amount.

#### delta Transformation

```
"Calculate_Delta": {
    "action": "delta",
    "parameters": {
        "dimension": "OpportunityId",
        "epoch": "CreatedDate_day_epoch",

        "inputMeasure": "Amount",
        "outputMeasure": "DeltaAmount",
        "source":
```

"Extract Opportunity History"

},

# computeRelative and computeExpression Transformations

```
"Compute Previous": {
    "action": "computeRelative",
    "parameters": {
      "partitionBy": [
        "OpportunityId"
      "orderBy": [
          "name": "CreatedDate",
          "direction": "asc"
      ],
      "computedFields": [
        {
          "name": "PrevAmount",
          "expression": {
            "sourceField": "Amount",
            "offset": "previous()",
            "default": "current()"
        }
      ],
      "source":
"Extract Opportunity History"
  },
"Compute Delta": {
    "action": "computeExpression",
    "parameters": {
      "computedFields": [
          "name": "DeltaAmount",
          "type": "Numeric",
          "precision": 18,
          "defaultValue": 0,
          "scale": 2,
          "saqlExpression": "Amount -
PrevAmount"
      ],
      "source": "Compute Previous"
```

| delta <b>Transformation</b> | computeRelative <b>and</b> computeExpression <b>Transformations</b> |
|-----------------------------|---|
|                             | },  |

## SEE ALSO:

computeRelative Transformation computeExpression Transformation

# Date Handling in Datasets

When Analytics loads dates into a dataset, it breaks up each date into multiple fields, such as day, week, month, quarter, and year, based on the calendar year. For example, if you extract dates from a CreateDate field, Analytics generates date fields such as CreateDate\_Day and CreateDate\_Week. If your fiscal year differs from the calendar year, you can enable Analytics to generate fiscal date fields as well.

Analytics generates the following date fields.

| Field Name                                    | Field Type | Description   |
|---|------------|---|
| <date field="" name="">_Second</date>         | Text       | Number of seconds. If the date contains no seconds, value is '0.'         |
| <date field="" name="">_Minute</date>         | Text       | Number of minutes. If the date contains no minutes, value is '0.'         |
| <date field="" name="">_Hour</date>           | Text       | Number of hours. If the date contains no hours, value is '0.'             |
| <date field="" name="">_Day</date>            | Text       | Day of the month.   |
| <date field="" name="">_Week</date>           | Text       | Week number in calendar year.   |
| <date field="" name="">_Month</date>          | Text       | Month number in calendar year.  |
| <date field="" name="">_Quarter</date>        | Text       | Quarter number in calendar year.  |
| <date field="" name="">_Year</date>           | Text       | Calendar year.  |
| <date field="" name="">_Week_Fiscal</date>    | Text       | Week number in fiscal year.   |
| <date field="" name="">_Month_Fiscal</date>   | Text       | Month number in fiscal year.  |
| <date field="" name="">_Quarter_Fiscal</date> | Text       | Quarter number in fiscal year.  |
| <date field="" name="">_Year_Fiscal</date>    | Text       | Fiscal year.  |
| <date field="" name="">_sec_epoch</date>      | Numeric    | Number of seconds that have elapsed since January 1, 1970 (midnight UTC). |

| Field Name                               | Field Type | Description   |
|--|------------|---|
| <date field="" name="">_day_epoch</date> | Numeric    | Number of days that have elapsed since<br>January 1, 1970 (midnight UTC). |

You can set metadata attributes to control how dates are loaded into datasets and to enable Analytics to generate fiscal date fields. You set the metadata attributes in the sfdcDigest transformation parameters for Salesforce data or in the metadata file for external data.

1

Important: Before loading dates from an external data file, ensure that you review the date format requirements here. Also, ensure that the column names in the external data file do not conflict with the generated date field names. For example, if you load a CSV with column Create\_Date, Analytics generates the Create\_Date\_Year field in the dataset. If the CSV also had a field named Create Date Year, Analytics would throw an error because the names conflict.

## Fiscal Periods in Analytics

If the calendar and fiscal year differ, you can enable Analytics to generate the fiscal date fields in the dataset in addition to calendar date fields. To enable Analytics to generate fiscal date fields, set the fiscalMonthOffset attribute to a value other than '0'. You set this attribute for each date column for which you want to generate fiscal date fields. If you set the offset to '0' or you do not specify a value, Analytics does not generate any fiscal date fields.

Additionally, to configure the fiscal periods, set the following metadata attributes for each date column:

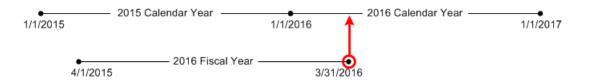
#### fiscalMonthOffset

In addition to enabling the generation of fiscal date fields, this attribute also determines the first month of the fiscal year. You specify the difference between the first month of the fiscal year and first month of the calendar year (January) in fiscalMonthOffset. For example, if your fiscal year begins in April, set fiscalMonthOffset to '3'.

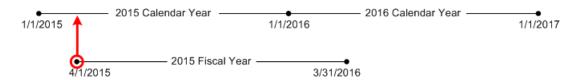
#### isYearEndFiscalYear

Because the fiscal year can start in one calendar year and end in another, you must specify which year to use for the fiscal year. The isYearEndFiscalYear attribute indicates whether the fiscal year is the year in which the fiscal year ends or begins.

To see how this works, let's look at a couple of examples. If isYearEndFiscalYear = true (or you do not specify this attribute), then the fiscal year is the year in which the fiscal year ends. As shown in the following diagram, any dates between 4/1/2015 and 3/31/2016 are part of the fiscal year 2016 because the fiscal year ends in 2016.



If isYearEndFiscalYear = false, then the fiscal year is the year in which the fiscal year begins. As shown in the following diagram, any dates between 4/1/2015 and 3/31/2016 are part of the fiscal year 2015 because the fiscal year begins in 2015.



#### Week Numbering in Analytics

For each date loaded into a dataset, Analytics generates the corresponding week number for the calendar year and, if applicable, fiscal year. Similar to the SOQL function WEEK\_IN\_YEAR, week 1 in Analytics is January 1 - January 7. (This is different from the UTC week () calculation.)

If needed, you can configure the week to start on a particular day of the week by setting the firstDayOfWeek attribute. For example, if January 1 is a Saturday and you configure the week to start on a Monday, then week 1 is January 1 - 2. Week 2 starts on Monday, January 3. Week 3 starts January 10, the following Monday. Notice that week 1 can be a short week to ensure that the subsequent weeks start on the specified day of the week.

## Create Datasets with the Dataflow

You can use the dataflow to create one or more datasets based on data from Salesforce objects or existing datasets. A *dataflow* is a set of instructions that specifies what data to extract from Salesforce objects or datasets, how to transform the datasets, and which datasets to make available for querying. With a dataflow, you can manipulate the extracted data and override the metadata before you load it into a dataset. You can schedule the dataflow to run to keep the datasets up to date.

To configure the dataflow, you add transformations to the dataflow definition file. A dataflow definition file is a JSON file that contains transformations that represent the dataflow logic. You add transformations to determine what data to extract, how to transform datasets, and which datasets to register to make available for queries. You can edit the dataflow definition file using the visual dataflow editor, or manually using a JSON editor.

#### IN THIS SECTION:

#### 1. Design the Dataflow

Before you start creating the dataflow, think about the dataflow design. Consider what data to make available for queries, where to extract the data from, and whether you need to transform the extracted data to get the data you want.

#### 2. Configure the Dataflow

Configure the dataflow based on your dataflow design. Configure it to extract data, transform datasets based on your business requirements, and register datasets that you want to make available for queries.

#### 3. Start and Stop a Dataflow

You can manually start a dataflow job to load the data into datasets immediately. You can also stop the job while it's running. You can run a maximum of 30 dataflow jobs during a rolling 24-hour period.

#### 4. Monitor a Dataflow Job

Use the Monitor tab in the data manager to monitor dataflow jobs to ensure that they complete successfully or to troubleshoot them if they fail.

#### 5. Schedule a Dataflow

After you run a job for the first time, it runs on a daily schedule, by default. You can schedule a dataflow to run by hour, week, or month, on specific days of the week or dates in the month. You might change the schedule to ensure that the data is available by a particular time or to run the job during non-business hours. You can also unschedule a dataflow.

#### 6. Transformations for Analytics Dataflows

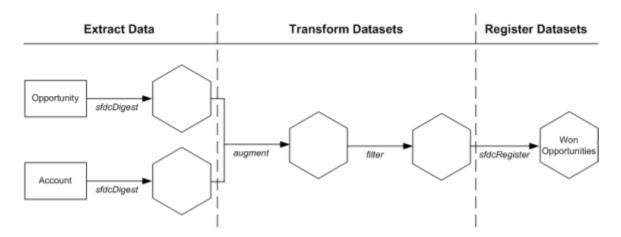
A *transformation* refers to the manipulation of data. You can add transformations to a dataflow to extract data from Salesforce objects or datasets, transform datasets that contain Salesforce or external data, and register datasets.

# Design the Dataflow

Before you start creating the dataflow, think about the dataflow design. Consider what data to make available for queries, where to extract the data from, and whether you need to transform the extracted data to get the data you want.

To illustrate some key design decisions, let's consider an example. In this example, the goal is to create a dataset called "Won Opportunities." The dataset will contain opportunity details, including the account name for each opportunity.

To create this dataset, you design the following dataflow:



The dataflow extracts opportunity data from the Opportunity object and extracts the account name from the Account object. For each extracted object, the dataflow creates a new dataset.

The dataflow then transforms the datasets created from the extracted data. First, the dataflow joins the opportunity and account data into a new dataset. Next, the dataflow filters the records based on the opportunity stage so that the dataset contains only won opportunities. Each time the dataflow transforms a dataset, it creates a new dataset.

Finally, because you want users to be able to query won opportunities only, you configure the dataflow to register the final dataset only. However, if you wanted, you could register any dataset created by the dataflow and register as many datasets as you like.

Carefully choose which datasets to register because:

- The total number of rows in all registered datasets cannot exceed 100 million rows per platform license, or 250 million per platform license *purchased before* October 20, 2015.
- Users that have access to registered datasets can query their data. Although, you can apply row-level security on a dataset to restrict access to records.

# Configure the Dataflow

Configure the dataflow based on your dataflow design. Configure it to extract data, transform datasets based on your business requirements, and register datasets that you want to make available for gueries.

You can configure the dataflow by manually editing its definition file, or by using the visual dataflow editor.

#### IN THIS SECTION:

Configure the Dataflow with the Dataflow Editor

Use the dataflow editor to configure your dataflow visually, without manually modifying the dataflow definition file.

Configure the Dataflow Through the Definition File

You can configure the dataflow by adding transformations directly to the dataflow definition file.

#### Edit Nodes in the Dataflow

When you edit a dataflow node, for example to change its name, or add or remove fields, consider that these changes can impact downstream nodes. If you're manually editing nodes in the JSON dataflow definition file, make sure that your changes are reflected in downstream nodes. If you're working in the dataflow editor, Analytics propagates many of your changes to downstream nodes for you.

# Configure the Dataflow with the Dataflow Editor

Use the dataflow editor to configure your dataflow visually, without manually modifying the dataflow definition file.

The dataflow editor visually displays the dataflow you're editing.

# **EDITIONS**

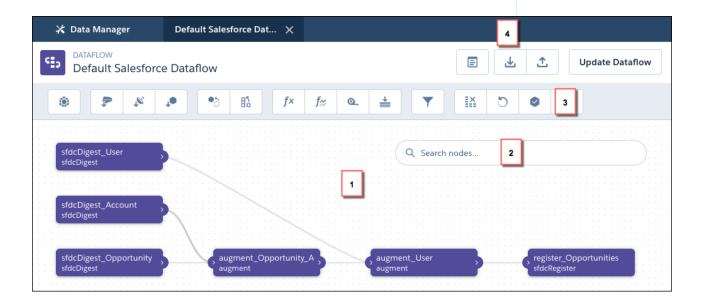
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# **USER PERMISSIONS**

To edit the dataflow:

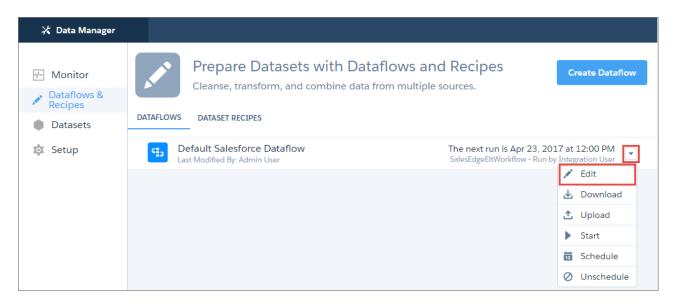
Edit Analytics Dataflows



The canvas (1) shows the individual nodes in your dataflow and the links between them. If you can't find a node, enter the node name in the search box (2) to focus on that node. The node palette (3) has buttons for each type of node. Click one to add it to the canvas. Use the buttons at the top of the editor (4) to work with the dataflow JSON. Preview and download the underlying JSON or upload an existing JSON file to work with it in the editor.

The dataflow in this example extracts data from the Salesforce Opportunity, Account, and User objects, augments it together, and creates a registered dataset. Imagine that you also want to extract cases in this dataflow, augment them with user data, and register the result as a new dataset. Let's look at how you can use the editor to modify the dataflow.

- In Analytics, click the gear icon ( and then click Data Manager.
- 2. Click the Dataflows & Recipe tab.
- 3. Click the dataflow that you want to edit, or click the actions button and select Edit.

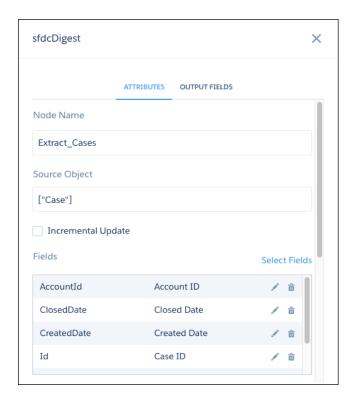


The dataflow editor opens, displaying the nodes in the dataflow.

- **4.** In the node palette, click the node you want to add. In this example, you want to extract data from a Salesforce object, so click the sfdcDigest node ( ).
- 5. Enter a name for the node.



- Note: Node names must be unique within the dataflow and not contain spaces.
- **6.** Enter the node attributes. In this example, you select Case as the source object, and the fields you need. You don't need an incremental update, or filters.



Note: When you enter attributes that reference objects, fields, or other nodes, click inside the attribute field to see a list that you can search and select from. To see the field list in sfdcDigest nodes, click **Select Fields**.

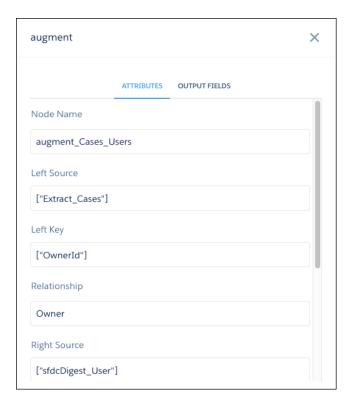
# 7. Click Create.

The new node appears on the canvas.

Tip: To edit a node on the canvas, just click it. To delete a node, hover over it and click the trash can.

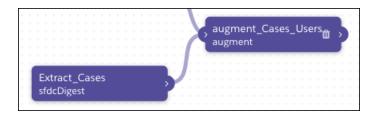


- 8. In the node palette, click the next node you want to add. In this example, you want to augment the case data with user data, so click the augment node ( ).
- 9. Enter the node name and attributes. In this example, you select the *Extract Cases* node as the left source. This node is the one you want to add the user columns to. The *Extract Users* node contains the columns you want to add, so you select it as the right source. The left and right keys are the fields from each node that are used to match records. In this case, you select the *OwnerId* field on cases, and the *Id* field on users.

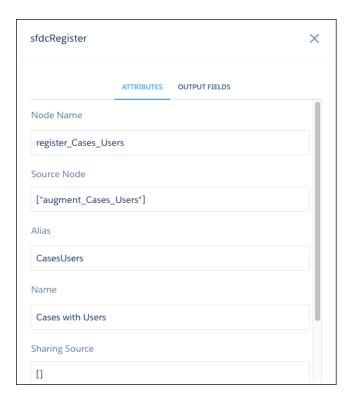


#### 10. Click Create.

The new node appears on the canvas, with lines showing the input of data from the source nodes.

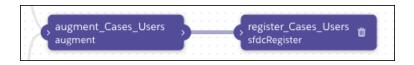


- Tip: If a node is not where you want it, drag it to wherever you want on the canvas. If it gets crowded, use your scroll wheel to zoom in and out if your browser supports it, or drag the canvas to move nodes into view.
- **11.** In the node palette, click the next node you want to add. In this example, you want to make the augmented case and user data available to use in a dataset, so click the sfdcRegister node (
- **12.** Enter the node name and attributes. In this example, you select the <code>augment\_Cases\_Users</code> node as the source. The Alias is the API name of the registered dataset, and the Name is its display name.



#### 13. Click Create.

The new node appears on the canvas, with a line showing the input of data from the source node.



- Tip: You can drag the output arrow of a source node to draw a link to another node on the canvas.
- **14.** When you finish editing, click **Update Dataflow** to update the definition file with your changes.

Analytics validates your dataflow to ensure that you provided all the required attribute values, and you can't continue if there are errors. Correct the errors it finds before trying again.

**(1) Important**: Updating a dataflow overwrites the existing dataflow.

To run your updated dataflow right away, click **Run Dataflow**. Alternatively, you can run the dataflow later from the Dataflows & Recipes tab of the data manager (See Start and Stop a Dataflow).

If you're adding nodes to create datasets for Salesforce objects, save time by using the dataset builder inside the dataflow editor. The dataset builder lets you specify the related Salesforce objects and fields you want in a dataset. It then adds the necessary sfdcDigest, augment, and register nodes to the dataflow for you.

To open the dataset editor in the dataflow editor, click

To learn about the dataset builder, read Load Salesforce Data with the Dataset Builder and the Dataflow.

To learn about each dataflow transformation and its attributes, read Transformations for Analytics Dataflows.

# Configure the Dataflow Through the Definition File

You can configure the dataflow by adding transformations directly to the dataflow definition file.

A dataflow definition file is a JSON file that contains transformations that represent the dataflow logic. The dataflow definition file must be saved with UTF-8 encoding.

Before you can configure a dataflow to process external data, you must upload the external data to Analytics.

- In Analytics, click the gear icon ( ) and then click Data Manager.
- 2. Click the Dataflows & Recipes tab.
- 3. Download the existing dataflow definition file by clicking **Download** in the actions menu.

# **EDITIONS**

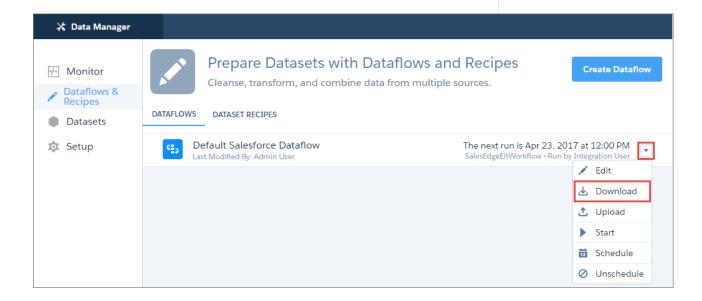
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# **USER PERMISSIONS**

To edit the dataflow definition file:

Edit Analytics Dataflows



- **4.** Make a backup copy of the existing dataflow definition file before you modify it.

  Analytics doesn't retain previous versions of the file. If you make a mistake, you can upload the previous version to roll back your changes.
- **5.** Add each transformation as a node in the dataflow definition file, using a JSON editor. For example, based on the design in the previous step, you can add the following transformation nodes:

```
"Extract_Opportunities": {
    "action": "sfdcDigest",
    "parameters": {
        "object": "Opportunity",
        "fields": [
```

```
{ "name": "Id" },
         { "name": "Name" },
         { "name": "Amount" },
         { "name": "StageName" },
         { "name": "CloseDate" },
         { "name": "AccountId" },
         { "name": "OwnerId" }
   }
},
"Extract AccountDetails": {
   "action": "sfdcDigest",
   "parameters": {
      "object": "Account",
      "fields": [
         { "name": "Id" },
         { "name": "Name" }
},
"Transform Augment OpportunitiesWithAccountDetails": {
   "action": "augment",
   "parameters": {
      "left": "Extract Opportunities",
      "left key": [ "AccountId" ],
      "relationship": "OpptyAcct",
      "right": "Extract AccountDetails",
      "right key": [ "Id" ],
      "right select": [
         "Name"
   }
},
"Transform Filter Opportunities": {
   "action": "filter",
   "parameters": {
      "filter": "StageName:EQ:Closed Won",
      "source": "Transform Augment OpportunitiesWithAccountDetails"
},
"Register_Dataset_WonOpportunities": {
   "action": "sfdcRegister",
   "parameters": {
      "alias": "WonOpportunities",
      "name": "WonOpportunities",
      "source": "Transform Filter Opportunities"
}
```

See Transformations for Analytics Dataflows for more about each transformation and its JSON.

Note: The JSON keys and values are case-sensitive. Each bolded key in the example JSON is the node name for a transformation.

Each node contains an action value, which identifies the transformation type. The order in which you add the transformations

to the dataflow definition file doesn't matter. Analytics determines the order in which to process the transformations by traversing the dataflow to determine the dependencies among them.

- (1) Important: Node names must be unique in a dataflow definition file, and can't contain space or tab characters. Consider that node names are **not** treated as case sensitive, so names such as "Extract\_Opportunities" and "extract\_opportunities" are not unique in the same definition file.
- **6.** Before you save the dataflow definition file, use a JSON validation tool to verify that the JSON is valid.

  An error occurs if you try to upload the dataflow definition file with invalid JSON. You can find JSON validation tools on the internet.
- 7. Save the dataflow definition file with UTF-8 encoding, and then close the file.
- 8. In the Dataflow view of the Monitor tab, click **Upload** from the action menu to upload the updated dataflow definition file.
  - Note: Uploading the dataflow definition file does not affect any running dataflow jobs and does not automatically start the dataflow job.

You can now start the dataflow on demand or wait for it to run on the schedule. Users cannot query the registered datasets until the dataflow runs.

If you have enabled replication, you can create multiple dataflows, in addition to the default dataflow, and configure them in the same way. Look out for the **Create Dataflow** button in the Dataflows & Recipes tab of the data manager after you enable replication. See Optimize Your Dataflows with Replication.



Note: If you have replication enabled, your org can have up to 35 dataflows. This number includes the default dataflow, and app dataflows such as the Sales Analytics and Service Analytics dataflows. Keep in mind that dataflows that take longer than 2 minutes to run count towards your 24-hour dataflow run limit.

### Edit Nodes in the Dataflow

When you edit a dataflow node, for example to change its name, or add or remove fields, consider that these changes can impact downstream nodes. If you're manually editing nodes in the JSON dataflow definition file, make sure that your changes are reflected in downstream nodes. If you're working in the dataflow editor, Analytics propagates many of your changes to downstream nodes for you.

#### Renaming Node Names

When you rename a node in the dataflow JSON, you need to manually check that the name is unique and change the name wherever the node is referenced in downstream nodes.

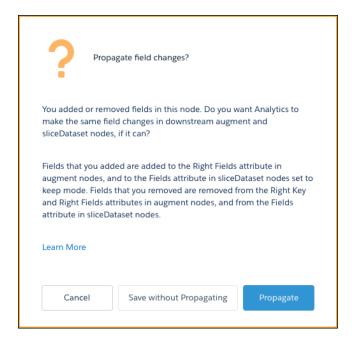
In the dataflow editor, Analytics validates that the new name is unique, and changes the name in downstream nodes for you.

### Adding Fields in a Node

When you add a field to a node in the dataflow JSON, consider that you might also need to add the field in these downstream nodes:

- augment: If you want to augment the new field on other data in the dataflow, add the field to the right\_select parameter in the corresponding augment node.
- sliceDataset: If there is a downstream sliceDataset node with the mode parameter set to select, add the new field to the fields parameter to make sure it isn't dropped.

When you add a field to a node in the dataflow editor, Analytics offers to propagate the field in downstream augment and sliceDataset nodes.



If you choose to propagate your changes, Analytics adds the new field to:

- The Right Fields attribute in downstream augment nodes.
- The Fields attribute in downstream sliceDataset nodes where the Mode attribute is set to Keep.

# Removing Fields in a Node

When you remove a field in a node in the dataflow JSON, the dataflow can fail if you don't also remove the field in these places:

- left\_key, right\_key, and right\_select parameters in downstream augment nodes.
- The fields parameter in downstream sliceDataset nodes.
- Downstream computeExpression or computeRelative nodes that reference the field.

When you remove a field in a node in the dataflow editor, Analytics offers to propagate the field in downstream augment and sliceDataset nodes. If you choose to propagate your changes, Analytics removes the field from:

- The Left Key, Right Key, and Right Fields attributes in downstream augment nodes.
- The Fields attribute in downstream sliceDataset nodes.
- Note: The propagate option doesn't remove fields from downstream computeExpression or computeRelative nodes that reference it.

You see the propagate option whenever you add or remove fields from these types of nodes:

- sfdcDigest
- digest
- augment
- computeExpression
- computeRelative
- sliceDataset

# Start and Stop a Dataflow

You can manually start a dataflow job to load the data into datasets immediately. You can also stop the job while it's running. You can run a maximum of 30 dataflow jobs during a rolling 24-hour period.

- In Analytics, click the gear icon ( ) and then click Data Manager.
   The data manager opens on the Monitor tab, with the Jobs view selected by default.
- 2. Click the Dataflows & Recipes tab.

# **EDITIONS**

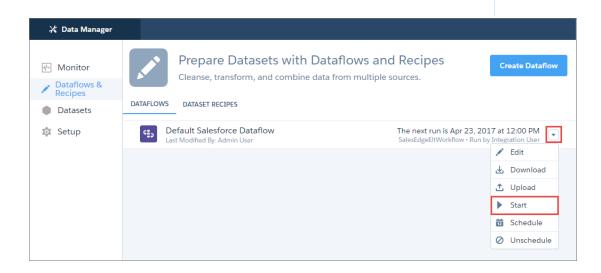
Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To start a dataflow job:

Edit Analytics Dataflows



- 3. Click **Start** in the actions menu to start the dataflow job.

  The dataflow job is added to the job queue. The **Start** action is grayed out while the dataflow job runs.
- **4.** After the job completes, Analytics sends an email notification to the user who created the dataflow.

The email notification indicates whether the job completed successfully. It also shows job details like start time, end time, duration, and number of processed rows. If the job failed, the notification shows the reason for the failure.



**Note**: If the dataflow creator is not an active user, the notification is sent to the user who last modified the dataflow schedule or definition file.

To stop a dataflow job that is currently running, click next to the job status.

If you click **Start** to restart a stopped dataflow, the job starts over—the dataflow job does not resume from the point at which it was stopped.

You can monitor the dataflow job on the Monitor tab to determine when the dataflow completes. After the dataflow completes successfully, refresh the Analytics home page to view the registered datasets.

### Monitor a Dataflow Job

Use the Monitor tab in the data manager to monitor dataflow jobs to ensure that they complete successfully or to troubleshoot them if they fail.

The Dataflows subtab on the Monitor tab shows the status, start time, and duration of the last 10 dataflow jobs and retains the last 7 days of history. To help you troubleshoot a failed job, you can view error messages about the job, view the run-time details about every transformation that is processed, and download error logs where available.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# USER PERMISSIONS

To access the data monitor:

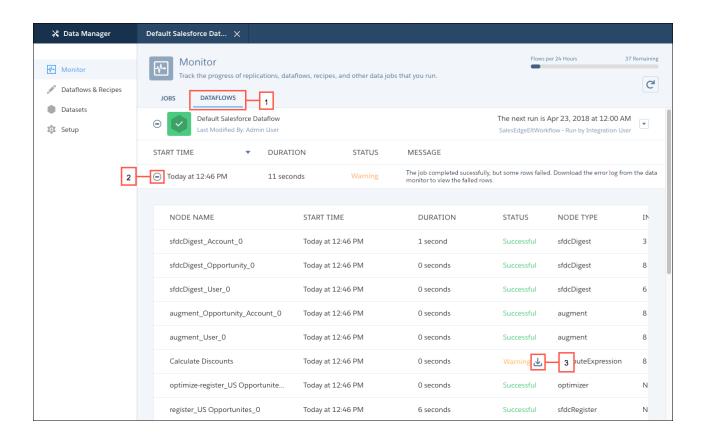
 Edit Analytics Dataflows, Upload External Data to Analytics, or Manage Analytics

To download an error log:

 Edit Analytics Dataflows and View All Data



Note: The dataflow owner doesn't need View All Data to download an error log.



- 1. In Analytics, click the gear icon ( ) and then click **Data Manager**. The data manager opens on the Monitor tab.
- 2. Click the **Dataflows** subtab (1).
- **3.** Click to see the latest status of a job. Each job can have one of these statuses.

| Status     | Description   |
|------------|---|
| Running    | The job is running.                                   |
| Failed     | The job failed.                                       |
| Successful | The job completed successfully.                       |
| Warning    | The job completed successfully, but some rows failed. |

- 4. If the dataflow job fails, expand the job node (2) and review the run-time details for every transformation that was processed.
- 5. If an error log is available for a node, click the download log button (3) to download a CSV file containing the failed rows.
  - Note: Error logs display the data from rows that have failed to load. To maintain data security and prevent unauthorized access to this data, only the dataflow owner or users with the View All Data permission can download an error log.
- **6.** If there's a problem with the dataflow logic, edit the dataflow and then run it again.



**Note:** You can have up to 40 dataflow runs in a rolling 24-hour period. Dataflow and recipe runs that take less than 2 minutes to run, and replication, don't count toward this limit. To track your current usage, use the flow indicator at the top of the Monitor tab.



## Schedule a Dataflow

After you run a job for the first time, it runs on a daily schedule, by default. You can schedule a dataflow to run by hour, week, or month, on specific days of the week or dates in the month. You might change the schedule to ensure that the data is available by a particular time or to run the job during non-business hours. You can also unschedule a dataflow.

- 1. In Analytics, click the gear icon ( ) and then click **Data Manager**. The data manager opens on the Monitor tab, with the Jobs view selected by default.
- 2. Click the Dataflows & Recipes tab.

# EDITIONS

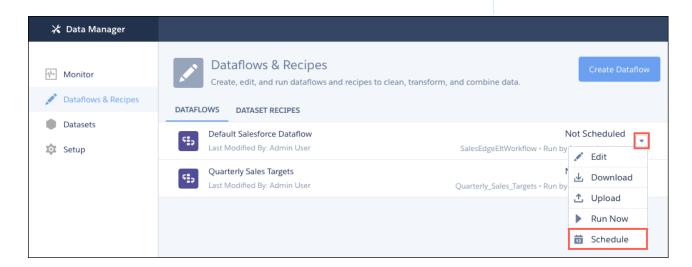
Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# USER PERMISSIONS

To schedule or unschedule a dataflow job:

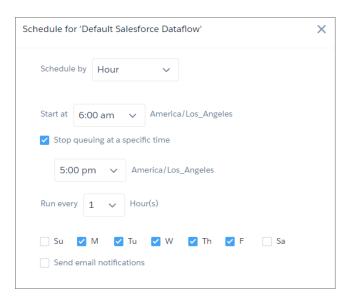
Edit Analytics Dataflows



- **3.** Click **Schedule** in the actions menu (1) to view or modify the schedule of the dataflow job. The scheduler appears.
- 4. From the **Schedule by** picklist, select the time frame that you want to schedule by and complete the other settings.

#### By Hour

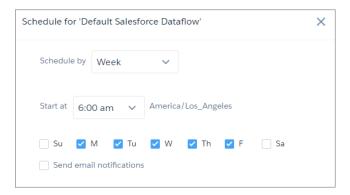
Run the dataflow at specified hourly intervals, starting at the time you select on the selected days.



Note: To stop the dataflow from running after a certain time each day, select **Stop queuing at a specific time**. For example, set a job to start at 8:00 am, run every hour, and stop after 6:00 pm to restrict runs to just office hours.

## By Week

Run the dataflow at the time you select on the selected days.



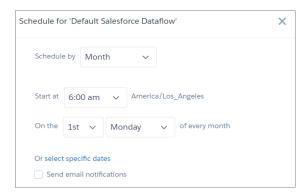
# By Month

Run the dataflow on a specific day or days each month. By default, you can schedule the job to run on a relative day each month, for example, the first Monday. If you want the job to run on a specific date or dates, click **select specific dates** and then select from the list.

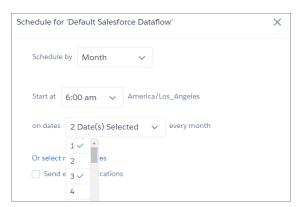
Schedule on a Relative Date

**Schedule on Specific Dates** 

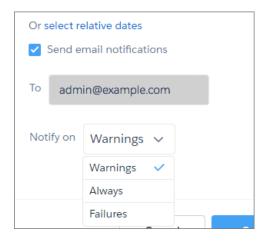
#### Schedule on a Relative Date



## **Schedule on Specific Dates**



**5.** To receive email notifications when the dataflow runs, select **Send email notifications** and choose when you want to be notified. You can be notified every time the dataflow runs, only when there are warnings, or only when the dataflow fails.



- Note: By default, email notifications are sent only to the person scheduling the dataflow. Other people with the Edit Analytics Dataflows permission can subscribe to a scheduled dataflow by editing the schedule and selecting **Send email notifications**.
- 6. Click Save.

# Transformations for Analytics Dataflows

A *transformation* refers to the manipulation of data. You can add transformations to a dataflow to extract data from Salesforce objects or datasets, transform datasets that contain Salesforce or external data, and register datasets.

For example, you can use transformations to join data from two related datasets and then register the resulting dataset to make it available for queries.

#### IN THIS SECTION:

# append Transformation

The append transformation combines rows from multiple datasets into a single dataset.

#### augment Transformation

The augment transformation augments an input dataset by combining columns from another related dataset. The resulting, augmented dataset enables queries across both related input datasets. For example, you can augment the Account dataset with the User dataset to enable a query to return account records and the full names of the account owners.

#### computeExpression Transformation

The computeExpression transformation enables you to add derived fields to a dataset. The values for derived fields aren't extracted from the input data source. Instead, Analytics generates the values using a SAQL expression, which can be based on one or more fields from the input data or other derived fields. For example, you can use an expression to assign a value to a field, concatenate text fields, or perform mathematical calculations on numeric fields.

#### computeRelative Transformation

You can use the computeRelative transformation to analyze trends in your data by adding derived fields to a dataset based on values in other rows. For example, to analyze sales pipeline trends, create derived fields that calculate the number of days an opportunity remains in each stage. You can also calculate the changes to the opportunity amount throughout the stages of the opportunity.

#### delta Transformation

The delta transformation calculates changes in the value of a measure column in a dataset over a period of time. The delta transformation generates an output column in the dataset to store the delta for each record. Create deltas to make it easier for business analysts to include them in queries.

#### digest Transformation

The digest transformation extracts replicated data in a dataflow. Use it to extract data replicated from your local Salesforce org, or data replicated through an external connection.

### dim2mea Transformation

The dim2mea transformation creates a new measure based on a dimension. The transformation adds the new measure column to the dataset. The transformation also preserves the dimension to ensure that existing lenses and dashboards don't break if they use the dimension.

#### edgemart Transformation

The edgemart transformation gives the dataflow access to an existing, registered dataset, which can contain Salesforce data, external data, or a combination of the two. Use this transformation to reference a dataset so that its data can be used in subsequent transformations in the dataflow. You can use this transformation and the augment transformation together to join an existing dataset with a new dataset.

#### export Transformation

The export transformation creates a data file and a schema file from data in a specified source node in your dataflow. After the dataflow runs, Einstein Discovery users can access these files through the public API.

#### filter Transformation

The filter transformation removes records from an existing dataset. You define a filter condition that specifies which records to retain in the dataset.

#### flatten Transformation

The flatten transformation flattens hierarchical data. For example, you can flatten the Salesforce role hierarchy to implement row-level security on a dataset based on the role hierarchy.

## sfdcDigest Transformation

The sfdcDigest transformation generates a dataset based on data that it extracts from a Salesforce object. You specify the Salesforce object and fields from which to extract data. You might choose to exclude particular fields that contain sensitive information or that aren't relevant for analysis.

#### sfdcRegister Transformation

The sfdcRegister transformation registers a dataset to make it available for queries. Users cannot view or run queries against unregistered datasets.

#### sliceDataset Transformation

The sliceDataset transformation removes fields from a dataset in your dataflow, leaving you with a subset of fields for use in a new dataset or in other transformations. This allows you to create multiple datasets, each with different sets of fields from a single dataset.

# update Transformation

The update transformation updates the specified field values in an existing dataset based on data from another dataset, which we'll call the lookup dataset. The transformation looks up the new values from corresponding fields in the lookup dataset. The transformation stores the results in a new dataset.

#### Overriding Metadata Generated by a Transformation

Optionally, you can override the metadata that is generated by a transformation. You can override object and field attributes. For example, you can change a field name that is extracted from a Salesforce object so that it appears differently in the dataset. To override the metadata, add the overrides to the Schema section of the transformation in the dataflow definition file.

#### SEE ALSO:

#### Create Datasets with the Dataflow

# append Transformation

The append transformation combines rows from multiple datasets into a single dataset.

Consider the following rules when using this transformation.

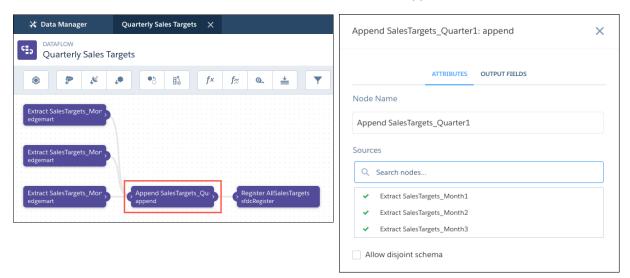
- This transformation does not remove duplicate records.
- All input datasets must have the same structure—the corresponding columns must be in the same order and have the same name and field type.

**(1)** 

**Example:** Let's look at an example. Each month, you create a dataset that contains the month's sales targets. Now, you want a holistic view of sales targets for all months. To do that, you create the following dataflow to merge the existing datasets into a single dataset.

## **Dataflow**

# **Append Node in Dataflow**



Here's the dataflow JSON.

```
"Extract SalesTargets Month3": {
  "action": "edgemart",
  "parameters": {
    "alias": "SalesTargets Month3"
  }
},
"Extract SalesTargets Month2": {
  "action": "edgemart",
  "parameters": {
    "alias": "SalesTargets Month2"
  }
},
"Extract SalesTargets_Month1": {
  "action": "edgemart",
  "parameters": {
    "alias": "SalesTargets_Month1"
  }
},
"Append SalesTargets_Quarter1": {
  "action": "append",
```

```
"parameters": {
    "enableDisjointedSchemaMerge": false,
    "sources": [
      "Extract SalesTargets Month1",
      "Extract SalesTargets_Month2",
      "Extract SalesTargets Month3"
    1
  }
},
"Register AllSalesTargets": {
  "action": "sfdcRegister",
  "parameters": {
    "name": "All Sales Targets",
    "alias": "AllSalesTargets",
    "source": "Append SalesTargets Quarter1"
  }
}
```

After you create the single dataset, you can use date filters to analyze the sales targets by month, quarter, or year.



Note: The append transformation doesn't remove duplicate rows.

## Append Datasets with Different Schema

By default, input datasets must have the same structure—the corresponding columns must have the same name and field type. For example, let's say you want to append your Canada opportunities to your U.S. opportunities.

#### **US Sales**

| # | Name    | Stage          | Amount |
|---|---------|----------------|--------|
| 1 | US Opp1 | Negotiation    | 100    |
| 2 | US Opp2 | Quote          | 200    |
| 3 | US Opp3 | Prospecting    | 300    |
| 4 | US Opp4 | Needs Analysis | 200    |

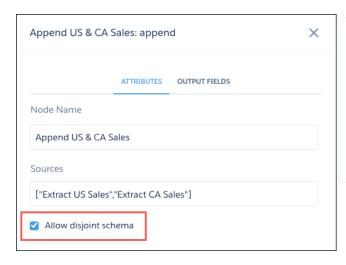
# **Canada Sales**

| # | Name 🔺  | Currency | Stage          | Value |
|---|---------|----------|----------------|-------|
| 1 | Ca Opp1 | CAD      | Negotiation    | 100   |
| 2 | Ca Opp2 | CAD      | Quote          | 200   |
| 3 | Ca Opp3 | CAD      | Prospecting    | 300   |
| 4 | Ca Opp4 | CAD      | Needs Analysis | 200   |

Here, the column names are different, and the Canada data has a Currency column. For the dataflow not to fail, select Allow disjoint schema in the append node in the dataflow editor. If you're working in the dataflow JSON, add the enableDisjointedSchemaMerge parameter and set its value to true.

## **Append Node in Dataflow Editor**

## **Append Node in Dataflow JSON**



```
"Append US & CA Sales": {
   "action": "append",
   "parameters": {
       "enableDisjointedSchemaMerge": true,
       "sources": [
            "Extract US Sales",
            "Extract CA Sales"
       ]
   }
},
```

When you run the dataflow, the data is merged without the dataflow failing.

| # | Name    | Currency | Stage          | Amount | Value |
|---|---------|----------|----------------|--------|-------|
| 1 | US Opp1 | -        | Negotiation    | 100    | -     |
| 2 | US Opp2 | -        | Quote          | 200    | -     |
| 3 | US Opp3 | -        | Prospecting    | 300    | -     |
| 4 | US Opp4 | -        | Needs Analysis | 200    | -     |
| 5 | Ca Opp1 | CAD      | Negotiation    | -      | 100   |
| 6 | Ca Opp2 | CAD      | Quote          | -      | 200   |
| 7 | Са Орр3 | CAD      | Prospecting    | -      | 300   |
| 8 | Ca Opp4 | CAD      | Needs Analysis | -      | 200   |

The append transformation adds all columns to the dataset and merges values in columns with the same name, such as Name. It also adds null values in a column for rows that didn't previously have that column. You can see this in the Currency column.



**Note**: If null measure handling in datasets isn't enabled for your org, append adds zeros in a column for rows that didn't previously have that column.

#### IN THIS SECTION:

## append Parameters

When you define an append transformation in the dataflow JSON, you set the action attribute to append and specify the parameters.

## append Parameters

When you define an append transformation in the dataflow JSON, you set the action attribute to append and specify the parameters.

This table describes the settings for the append node in the dataflow editor.

| Setting               | Required? | Value  |
|-----------------------|-----------|--|
| Sources               | Yes       | Nodes in the dataflow that identify the datasets that you want to merge.   |
| Allow disjoint schema | No        | Select to allow appending of datasets with different schema.  Note: If this setting isn't selected, appending datasets with different schemas causes the dataflow to fail. |

This table describes the input parameters for the append transformation in the dataflow JSON.

| Parameter                   | Required? | Value   |
|-----------------------------|-----------|---|
| sources                     | Yes       | Nodes in the dataflow definition file that identify the datasets that you want to merge.                        |
| enableDisjointedSchemaMerge | No        | Indicates whether appending datasets with different schema is allowed.  |
|                             |           | To allow appending of disjoint schema, set to true.   |
|                             |           | <ul> <li>To prevent appending of disjoint schema, set to false. The<br/>default is false.</li> </ul>            |
|                             |           | Example:  |
|                             |           | "enableDisjointedSchemaMerge": true   |
|                             |           | Note: If this parameter is set to false, appending datasets with different schemas causes the dataflow to fail. |

SEE ALSO:

append Transformation

# augment Transformation

The augment transformation augments an input dataset by combining columns from another related dataset. The resulting, augmented dataset enables queries across both related input datasets. For example, you can augment the Account dataset with the User dataset to enable a query to return account records and the full names of the account owners.

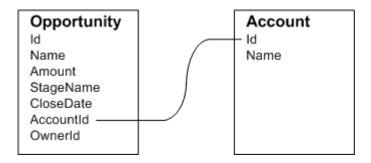
When you create the transformation, you identify each input dataset as the left or right dataset and specify the relationship between them. Analytics combines all the columns of the left dataset with only the specified columns from the right dataset. (Keep in mind that each dataset can't have more than 5,000 columns.) Analytics adds the relationship to column names from the right dataset, which is useful when the left and right datasets have columns with the same names.

For each record in the left dataset, the augment transformation performs a lookup to find a matching record in the right dataset. To match related records, the augment transformation uses a match condition. You specify the match condition based on a key from each dataset. For example:

```
"left_key": [ "Id" ],"right_key": [ "Prod_ID" ]
```

A key can be a single-column key or a composite key. For a match condition based on a composite key, the keys for both datasets must have the same number of columns, specified in the same order.

- ? Tip: To augment more than two datasets, augment two datasets at a time. For example, to augment three datasets, augment the first two datasets, and then augment the resulting dataset with the third dataset.
- **Example**: Let's look at an example of the augment transformation. In this example, you want to extract data from the Opportunity and Accounts objects, and then match the data based on the account ID field.

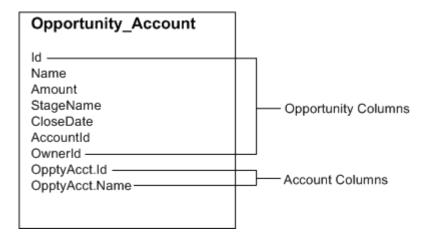


You create the following dataflow definition file.

```
"Extract Opportunity": {
    "action": "sfdcDigest",
    "parameters": {
        "object": "Opportunity",
        "fields": [
            { "name": "Id" },
            { "name": "Name" },
            { "name": "Amount" },
            { "name": "StageName" },
            { "name": "CloseDate" },
            { "name": "AccountId" },
            { "name": "OwnerId" }
        ]
    }
},
"Extract AccountDetails": {
     "action": "sfdcDigest",
      "parameters": {
          "object": "Account",
          "fields": [
              { "name": "Id" },
              { "name": "Name" }
          1
      }
},
"Augment OpportunitiesWithAccountDetails": {
    "action": "augment",
    "parameters": {
        "operation": "LookupSingleValue",
        "left": "Extract_Opportunity",
        "left key": [
```

```
"AccountId"
        ],
        "relationship": "OpptyAcct",
        "right": "Extract AccountDetails",
        "right key": [
            "Id"
        ],
        "right select": [ "Name" ]
},
"Register OpportunityDetails": {
    "action": "sfdcRegister",
    "parameters": {
        "alias": "Opportunity Account",
        "name": "Opportunity Account",
        "source": "Augment_OpportunitiesWithAccountDetails" }
}
```

After you run the dataflow, Analytics creates and registers the Opportunity\_Account dataset. It also adds the relationship as a prefix to all columns from the right dataset.



## IN THIS SECTION:

## Special Cases for Matching Records with the augment Transformation

For each record in the left dataset, the augment transformation performs a lookup to find a matching record in the right dataset. However, it's critical that you understand how the augment transformation handles special cases when matching records.

# augment Parameters

When you define an augment transformation, you set the action attribute to augment and specify the parameters.

# Special Cases for Matching Records with the augment Transformation

For each record in the left dataset, the augment transformation performs a lookup to find a matching record in the right dataset. However, it's critical that you understand how the augment transformation handles special cases when matching records.

Let's look at some examples that illustrate some special cases.

# **Handling Null Keys**

When a record in the left dataset contains a null key, Analytics doesn't perform a lookup to match the record. Instead, Analytics appends the right columns and inserts null for dimensions (including dates) and '0' for measures.

Let's look at an example. You apply the augment transformation on the following datasets, set the relationship to "Price,", and match the records based on the Id and ProdId fields.



| Price  |           |           |
|--------|-----------|-----------|
| Prodid | Pricebook | UnitPrice |
| Prod1  | Standard  | 1000      |
| Prod2  | Standard  | 450       |
| nulí   | Custom    | 800       |
| Prod3  | Standard  | 700       |

Analytics doesn't match the last record because the product ID is null. Instead, Analytics inserts a null for the Price.Pricebook dimension and '0' for the Price.UnitPrice measure. Here's the resulting dataset after the augment.

```
      { "id":"Prod1", "Name":"Table", "Price.Pricebook":"Standard", "Price.UnitPrice":1000 },

      { "id":"Prod2", "Name":"Chair", "Price.Pricebook":"Standard", "Price.UnitPrice":450 },

      { "id":null, "Name":"Bench", "Price.Pricebook":null, "Price.UnitPrice":0 }
```

### **Handling Empty Keys**

Analytics matches empty-value left keys and empty-value right keys.

Let's look at an example. You apply the augment transformation on the following datasets, set the relationship to "Price,", and match the records based on the Id and ProdId fields.



| Price                      |          |      |
|----------------------------|----------|------|
| ProdId Pricebook UnitPrice |          |      |
| Prod1                      | Standard | 1000 |
| Prod2                      | Standard | 450  |
|                            | Custom   | 800  |
| null                       | Standard | 700  |

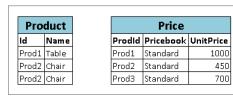
Analytics matches the last record in the Product dataset with the third record in the Price dataset because they both have empty values (""). Here's the resulting dataset after the augment.

```
{ "id":"Prod1", "Name":"Table", "Price.Pricebook":"Standard", "Price.UnitPrice":1000 }, 
{ "id":"Prod2", "Name":"Chair", "Price.Pricebook":"Standard", "Price.UnitPrice":450 }, 
{ "id":"", "Name":"Bench", "Price.Pricebook":"Custom", "Price.UnitPrice":800 }
```

# **Handling Non-Unique Keys**

Although it's recommended, the left key doesn't have to be unique. If multiple records have the same left key, Analytics creates the same values for the appended columns.

Let's look at an example. You apply the augment transformation on the following datasets, set the relationship to "Price,", and match the records based on the Id and ProdId fields.



Analytics matches the records in the Product dataset with records in the Price dataset. Here's the resulting dataset after the augment.

```
{ "id":"Prod1", "Name":"Table", "Price.Pricebook":"Standard", "Price.UnitPrice":1000 }, { "id":"Prod2", "Name":"Chair", "Price.Pricebook":"Standard", "Price.UnitPrice":450 }, { "id":"Prod2", "Name":"Chair", "Price.Pricebook":"Standard", "Price.UnitPrice":450 }
```

#### **Handling No Match**

If left key doesn't have a match in the right dataset, Analytics appends the right columns and inserts null for dimensions (including dates) and '0' for measures.

Let's look at an example. You apply the augment transformation on the following datasets, set the relationship to "Price,", and match the records based on the Id and ProdId fields.



Because no keys match, Analytics doesn't match any records in the Product dataset with records in the Price dataset. Here's the resulting dataset after the augment.

```
{ "id":"Prod1", "Name":"Table", "Price.Pricebook": null, "Price.UnitPrice":0 }, 
{ "id":"Prod2", "Name":"Chair", "Price.Pricebook": null, "Price.UnitPrice":0 }, 
{ "id":"Prod3", "Name":"Bench", "Price.Pricebook": null, "Price.UnitPrice":0 }
```

# **Handling Multiple Matches**

If the left dataset has a one-to-many relationship with the right dataset, Analytics might find multiple matches for a left record. What Analytics does with multiple matches depends on the specified augment operation. You can specify one of the following operations to handle the multiple-match case:

#### LookupSingleValue

The augment transformation returns results from a single row. Analytics randomly selects one row from the list of matched rows.



Note: Each time you run the dataflow, Analytics can return different results depending on the returned row.

Let's look at an example. You apply the augment transformation on the following datasets, set the relationship to "Price," set the operation to LookupSingleValue, and match the records based on the Id and ProdId fields.

| Product |       |
|---------|-------|
| Id      | Name  |
| Prod1   | Table |
| Prod2   | Chair |
| Prod3   | Bench |

| Price  |           |           |
|--------|-----------|-----------|
| Prodid | Pricebook | UnitPrice |
| Prod1  | Standard  | 1000      |
| Prod2  | Standard  | 450       |
| Prod3  | Custom    | 800       |
| Prod3  | Standard  | 700       |
|        |           |           |

Although there are multiple rows for Prod3 in the Price dataset, Analytics randomly chooses one matching row and returns values based on that row. Here's the resulting dataset after the augment if Analytics chooses the first Prod3 row.

```
{ "id":"Prod1", "Name":"Table", "Price.Pricebook":"Standard", "Price.UnitPrice":1000 }, { "id":"Prod2", "Name":"Chair", "Price.Pricebook":"Standard", "Price.UnitPrice":450 }, { "id":"Prod3", "Name":"Bench", "Price.Pricebook":"Custom", "Price.UnitPrice":800 }
```

#### LookupMultiValue

Analytics returns results from all matched rows.

Let's look at an example. You apply the augment transformation on the following datasets, set the relationship to "Price," set the operation to LookupMultiValue, and match the records based on the Id and ProdId fields.



| Price  |           |           |
|--------|-----------|-----------|
| Prodid | Pricebook | UnitPrice |
| Prod1  | Standard  | 1000      |
| Prod2  | Standard  | 450       |
| Prod3  | Custom    | 800       |
| Prod3  | Standard  | 700       |

Because the lookup returns multiple rows for Prod3, the dimension Price.Pricebook field in the resulting dataset becomes a multi-value field, showing all dimension values. The measure field Price.UnitPrice contains 1500, which is the sum of 800 and 700. Here's the resulting dataset after the augment.

```
{ "id":"Prod1", "Name":"Table", "Price.Pricebook":"Standard", "Price.UnitPrice":1000 },
{ "id":"Prod2", "Name":"Chair", "Price.Pricebook":"Standard", "Price.UnitPrice":450 },
{ "id":"Prod3", "Name":"Bench", "Price.Pricebook":"Custom", "Price.Pricebook":"Standard", "Price.UnitPrice":1500 }
```



Mote: If you are augmenting date fields from the right dataset, the LookupMultiValue operation can lead to fields containing multiple date values, which can give unexpected results. We recommend that you use the LookupSingleValue operation when augmenting date fields, or augment the date fields in a separate LookupSingleValue augment node.

# SEE ALSO:

# augment Transformation

# augment Parameters

When you define an augment transformation, you set the action attribute to augment and specify the parameters.

The following table describes the input parameters.

| Parameter    | Required?   | Value  |
|--------------|---|--|
| operation    | No  | Indicates what the transformation does if it matches multiple rows in the right dataset with a row in the left. Valid values:  |
|              |   | • LookupSingleValue. Returns values from one of the matched rows. If you don't specify the operation parameter, the transformation uses this operation.  |
|              |   | <ul> <li>LookupMultiValue. Returns values from all matched rows.</li> </ul>  |
|              |   | For more information about each operation, see Special Cases for Matching Records with the augment Transformation.   |
| left         | Yes   | Node in the dataflow definition file that identifies the left dataset. This is one of two input sources for this transformation.   |
| left_key Yes | Key column in the left dataset used to augment the datasets. If you use a composite key, the left and right keys must have the same number of columns in the same order. For a composite key, use the following syntax: |  |
|              |   | [ "Key Column1", "Key Column2",, "Key ColumnN" ]   |
|              |   | Note: The left or right key can't be a multi-value field.  |
| right        | Yes   | Node in the dataflow definition file that identifies the right dataset. This is one of two input sources for this transformation.  |
| relationship | Yes   | Relationship between the left and right datasets. The dataflow adds the relationship to the beginning of the right column names in the output dataset to make the column names unique and descriptive.                             |
| right_select | Yes   | An array of column names from the right dataset that you want to include in the output dataset. The dataflow adds the relationship as a prefix to the column name to determine the name of the right column in the output dataset. |

| Parameter | Required? | Value   |
|-----------|-----------|---|
| right_key | Yes       | Key column in the right dataset used to augment the datasets. If you use a composite key, the left and right keys must have the same number of columns in the same order. |

SEE ALSO:

augment Transformation

#### computeExpression Transformation

The computeExpression transformation enables you to add derived fields to a dataset. The values for derived fields aren't extracted from the input data source. Instead, Analytics generates the values using a SAQL expression, which can be based on one or more fields from the input data or other derived fields. For example, you can use an expression to assign a value to a field, concatenate text fields, or perform mathematical calculations on numeric fields.



**Note:** The computeExpression and computeRelative transformations are similar, but they have a key difference. The computeExpression transformation performs calculations based on other fields within the same row. The computeRelative transformation performs calculations based on the previous and next values of the same field in other rows.

Consider the following guidelines when creating a computeExpression transformation:

- You can include only the following SAQL operators and functions in the expression:
  - Arithmetic operators
  - Case operator
  - String operator
  - Date functions
- Multi-value fields aren't supported. The dataflow fails if you include a multi-value field in the SAQL Expression parameter.
- The values of the derived field must match its specified type. For example, set the type of the derived field to Text if the values are strings.
- Analytics calculates the values of derived fields in the order in which they are listed in the JSON. Thus, if you create a derived field based on other derived fields in the same computeExpression transformation, the input derived fields must be listed first. For example, Derived\_A must be listed before Derived\_B in the following computeExpression transformation JSON snippet:

```
1
}
}
```

- You can choose whether the resulting dataset includes only the derived fields, or includes the input and derived fields.
- Example: Let's look at an example. You want to create a dataset based on Salesforce opportunity data. You create a dataflow that extracts the ld and Amount fields from the Opportunity object. In addition, you also want to add the following derived fields to the dataset: ModifiedId, SalesTax, FinalPrice, and ValueCategory. For the derived fields, you will:
  - Append "SFDC" to each opportunity Id to get a new modified Id.
  - Calculate the sales tax based on an 8% tax rate.
  - Calculate the final price by adding the amount and sales tax.
  - Categorize opportunities into low-, medium-, and high-value buckets based on the calculated final price.

You create the following dataflow definition.

```
"salesData": {
      "action": "sfdcDigest",
      "parameters": {
         "object": "Opportunity",
         "fields": [
            {"name": "Amount"},
            {"name": "Id"}]}},
   "Derived Fields": {
      "action": "computeExpression",
      "parameters": {
         "source": "salesData",
         "mergeWithSource": true,
         "computedFields": [
               "name": "ModifiedId",
               "type": "Text",
               "saqlExpression": "\"SFDC\" + Id"},
            {
               "name": "SalesTax",
               "type": "Numeric",
               "precision": 18,
               "defaultValue": "0",
               "scale": 5,
               "saqlExpression": "Amount * 0.08"},
            {
               "name": "FinalPrice",
               "type": "Numeric",
               "precision": 18,
               "defaultValue": "0",
               "scale": 5,
               "saqlExpression": "Amount + SalesTax"},
               "name": "ValueCategory",
               "type": "Text",
               "saqlExpression": "case when FinalPrice < 1000 then \"Low\" when
FinalPrice >= 1000 and FinalPrice < 2000 then \"Medium\" else \"High\" end"}
```

```
}

},

"Register_CategorizedSales": {
    "action": "sfdcRegister",
    "parameters": {
        "alias": "Categorized_Sales",
        "name": "Categorized_Sales",
        "source": "Derived_Fields" }

}
```

#### IN THIS SECTION:

#### computeExpression Parameters

When you define a computeExpression transformation, you set the action attribute to computeExpression. You also specify the parameters for the input source and the expression used to generate the values.

# computeExpression Parameters

When you define a computeExpression transformation, you set the action attribute to computeExpression. You also specify the parameters for the input source and the expression used to generate the values.

You can specify parameters in the following sections of the computeExpression node: parameters and computedFields.

#### **Parameters**

The following table describes the parameters in the parameters section.

| Parameter       | Required? | Value   |
|-----------------|-----------|---|
| source          | Yes       | Node in the dataflow definition file that identifies the input source for this transformation.  |
| mergeWithSource | No        | Indicates whether the input fields are included with the derived fields in the resulting dataset. When true, the resulting dataset contains all input fields from the source and the newly generated derived fields. When false, the resulting dataset contains the derived fields only. Default is true. |
| computedFields  | Yes       | Attributes and expression used to generate derived fields in the dataset. See computedFields.   |

# computedFields

The following table describes the attributes in the computedFields section. It also describes optional attributes that you can provide to override the field metadata to make the data appear differently in a dataset. For example, Analytics can replace null values in a field with a default value.

| Attribute      | Required?                  | Value  |  |  |
|----------------|----------------------------|--|--|--|
| name           | Yes                        | API name of the generated field.   |  |  |
|                |                            | Note: The API names must be unique. Otherwise, the dataflow fails to run.  |  |  |
| type           | Yes                        | Analytics field type associated with the field.<br>Valid types are Text, Numeric, or Date.   |  |  |
|                |                            | Example:   |  |  |
|                |                            | "type": "Text"   |  |  |
| label          | No                         | The display name of the generated field that appears in the Analytics user interface. Can be up to 255 characters. Defaults to input field name if not specified.  |  |  |
| saqlExpression | Yes                        | SAQL expression used to calculate the value for the derived field. The expression can be based on input fields or other derived fields in the transformation.  Example:  |  |  |
|                |                            | "saqlExpression":"toDate(birth_day, \"yyyy-M-d\")"   |  |  |
|                |                            | Note: If a field name in a SAQL expression contains characters other than letters, numbers, or underscores, enclose the name in single quotes. For example, field names resulting from an augment are prefixed with the relationship name and a dot, and must be. enclosed in single quotes. |  |  |
|                |                            | Note: The use of multi-value fields as input fields isn't supported.   |  |  |
| format         | Yes (for Date fields only) | Format of the derived date field. For information about formats, see the Analytics External Data Format Reference.   |  |  |

| Attribute           | Required? | Value  |
|---------------------|-----------|--|
| fiscalMonthOffset   | No        | For date fields only. The difference, in months, between the first month of the fiscal year and the first month of the calendar year (January). For example, if the fiscal year starts in January, the offset is 0. If the fiscal year starts in October, the offset is 9.   |
|                     |           | Example:   |
|                     |           | "fiscalMonthOffset": 9   |
|                     |           | When you set fiscalMonthOffset to a value other than 0, Analytics generates fields to show the fiscal week, month, quarter, and year that a date value falls in. You can use these fields to group and filter by fiscal period in a dataset.   |
|                     |           | For more information, see Date Handling in Datasets.   |
|                     |           | Warning: Analytics doesn't support fields with different fiscalMonthOffset values in the same dataset. Using different fiscalMonthOffset values can produce unexpected results when you filter by relative fiscal date ranges. We recommend that you set the same value for all fiscalMonthOffset attributes in a dataset. |
| isYearEndFiscalYear | No        | For date fields only, when fiscalMonthOffset is greater than 0. Indicates whether the fiscal year is the year in which the fiscal year ends or begins. Because the fiscal year can start in one calendar year and end in another, you specify which year to use for the fiscal year.                                       |
|                     |           | • If true, then the fiscal year is the year in which the fiscal year ends. The default is true.  |
|                     |           | • If false, then the fiscal year is the year in which the fiscal year begins.  |
|                     |           | Example:   |
|                     |           | "isYearEndFiscalYear": true  |

| Attribute      | Required?                     | Value  |  |  |
|----------------|-------------------------------|--|--|--|
|                |                               | For more information, see Date Handling in Datasets.   |  |  |
| firstDayOfWeek | No                            | For date fields only. The first day of the week for the calendar year and, if applicable, fiscal year. Use 0 to set the first day to be Sunday, 1 to set the first day to be Monday, and so on. Use -1 to set the first day to be on January 1. The default is -1.   |  |  |
|                |                               | Example:   |  |  |
|                |                               | "firstDayOfWeek": 0  |  |  |
|                |                               | For more information, see Date Handling in Datasets.   |  |  |
| precision      | Yes (for Numeric fields only) | The maximum number of digits in a numeric value, or the length of a text value. For numeric values: Includes all numbers to the left and to the right of the decimal point (but excludes the decimal point character). Value must be from 1 to 16. For text values: Value defaults to 255 characters, and must be from 1 to 32,000 characters.  Example: |  |  |
|                |                               | "precision": 10  |  |  |
| scale          | Yes (for Numeric fields only) | The number of digits to the right of the decimal point in a numeric value. Must be less than the precision value. Value must be from 1 to 15 characters.  Example:   |  |  |
|                |                               | "scale": 2   |  |  |
| defaultValue   | No                            | For text and numeric fields that can be null.<br>Default value that replaces a null value for<br>the specified field. Enter a string value.  |  |  |
|                |                               | Example:   |  |  |
|                |                               | "defaultValue": "0"  |  |  |

# SEE ALSO:

computeExpression Transformation

# computeRelative Transformation

You can use the computeRelative transformation to analyze trends in your data by adding derived fields to a dataset based on values in other rows. For example, to analyze sales pipeline trends, create derived fields that calculate the number of days an opportunity remains in each stage. You can also calculate the changes to the opportunity amount throughout the stages of the opportunity.



**Note:** The computeExpression and computeRelative transformations are similar, but the computeExpression transformation performs calculations based on fields within the same row. The computeRelative transformation performs calculations based on the same field in other rows—particularly the current, first, previous, or next rows.

When you define a computeRelative transformation, you specify a source transformation as the input, partition the records, and sort the records within each partition. For example, you can use sfdcDigest to extract opportunity history records, and then use computeRelative to calculate changes in each opportunity over time. You can partition opportunity history records by opportunity ID, and then chronologically sort records within each partition to correctly identify the previous and next values.



Note: Derived fields can be based on a source field or on a SAQL expression.



**Example**: Let's look at an example. To perform trending analysis on the sales pipeline, create a dataflow that contains the following transformations.

#### sfdcDigest transformation

Extracts the following data from the OpportunityHistory object.

| Opportunity ID     | Created Date             | Stage Name          | Amount  | Close Date |
|--------------------|--------------------------|---------------------|---------|------------|
| 006R0000001rerEIAQ | 2017-09-11T18:47:39.000Z | Id. Decision Makers | 120,000 | 2015-06-24 |
| 006R0000001rerGIAQ | 2017-09-11T18:48:12.000Z | Qualification       | 20,000  | 2015-10-22 |
| 006R0000001rerFIAQ | 2017-09-11T18:48:39.000Z | Value Proposition   | 75,000  | 2015-09-23 |
| 006R0000001rerDIAQ | 2017-09-11T18:49:11.000Z | Perception Analysis | 38,000  | 2015-07-15 |
| 006R0000001rerHIAQ | 2017-09-11T18:49:36.000Z | Negotiation/Review  | 120,000 | 2015-07-31 |

#### computeRelative transformation

Performs the following tasks:

- Partitions the extracted records by opportunity ID.
- Within each partition, sorts the extracted records by CreatedDate in ascending order. Sorting by CreatedDate ensures that the changes that occur for each opportunity are listed in chronological order.
- Adds the following derived fields to the final dataset.

#### OpportunityCreatedDate

Determines the date that the opportunity was first created. You can use this date with the actual close date to determine the number of days required to close the sale. The goal is to shorten the sales cycle to recognize revenue.

#### **AmountPrev**

Determines the previous amount of the opportunity. You can use this field to determine if the values of opportunities are increasing or decreasing, which can affect whether you hit your sales targets.

#### CloseDatePrev

Determines the previous expected close date for the opportunity. You can use this field to analyze how the expected close date changes over the sales cycle of the opportunity. If the expected close date keeps getting pushed out, identify the issues that are causing the longer sales cycle.

# AmountChange

Uses a SAQL expression to calculate the percentage change of the opportunity amount from its previous amount.

# AmountChangeDirection

Uses a SAQL expression to generate a text value to show the direction in which an opportunity amount has changed: Up, Down, or No Change.

# sfdcRegister transformation

Registers the final dataset that contains the extracted fields from the sfdcDigest transformation and the derived fields from computeRelative transformation.

You create the following dataflow definition.

```
"extractOppHistory": {
      "action": "sfdcDigest",
      "parameters": {
          "object": "OpportunityHistory",
          "fields": [
              {"name": "OpportunityId"},
              {"name": "CreatedDate"},
              {"name": "StageName"},
              {"name": "Amount"},
              {"name": "CloseDate"}
          ]
  },
"computeTrending": {
  "action": "computeRelative",
  "parameters": {
    "source": "extractOppHistory",
    "partitionBy": ["OpportunityId"],
    "orderBy": [
      {
        "name": "CreatedDate",
        "direction": "asc"
      }
    ],
    "computedFields": [
        "name": "OpportunityCreatedDate",
        "label": "Opportunity Created Date",
       "description": "Determines the date that the opportunity was first created.",
        "expression": {
          "sourceField": "CreatedDate",
          "offset": "first()",
          "default": "current()"
        }
      },
        "name": "AmountPrev",
        "label": "Previous Amount",
        "description": "Determines the previous amount of the opportunity",
        "expression": {
          "sourceField": "Amount",
          "offset": "previous()",
```

```
"default": "null"
          }
        },
          "name": "CloseDatePrev",
          "label": "Previous Close Date",
          "description": "Determines the previous expected close date for the
opportunity",
          "expression": {
            "sourceField": "CloseDate",
            "offset": "previous()",
            "default": "current()"
          }
        },
          "name": "AmountChange",
          "label": "Amount % Change",
          "description": "Determines percentage change from previous amount",
          "expression": {
          "saqlExpression": "(current(Amount)-previous(Amount))/previous(Amount)*100",
            "type": "Numeric",
            "scale": 2,
            "default": "null"
          }
        },
          "name": "AmountChangeDirection",
          "label": "Amount Change Direction",
          "description": "Determines text to indicate direction of change",
          "expression": {
            "saqlExpression": "case when current(Amount)>previous(Amount) then \"Up\"
when current(Amount) previous(Amount) then \"Down\" else \"No Change\" end",
            "type": "Text",
            "default": ""
          }
        }
      ]
  }
 "Register OppportunityHistory Dataset": {
   "action": "sfdcRegister",
    "parameters": {
      "alias": "SalesPipelineTrending1",
     "name": "Sales Pipeline Trending1",
     "source": "computeTrending"
   }
```

The dataflow runs and creates the dataset with the new derived fields.

| Opportunity ID     | Created Date             | Amount  | OpportunityCreatedDate   | Previous Amount | Amount % Change | Amount Change Direction | Previous Close Date |
|--------------------|--------------------------|---------|--------------------------|-----------------|-----------------|-------------------------|---------------------|
| 006R0000001rerDIAQ | 2017-09-11T18:49:11.000Z | 38,000  | 2017-08-28T18:24:41.000Z | 40,000          | -5.0            | Down                    | 2013-05-06          |
| 006R0000001rerEIAQ | 2017-08-28T18:24:41.000Z | 140,000 | 2017-08-28T18:24:41.000Z | -               | -               | No Change               | 1970-1-1            |
| 006R0000001rerEIAQ | 2017-08-28T18:24:41.000Z | 140,000 | 2017-08-28T18:24:41.000Z | 140,000         | 0               | No Change               | 2013-03-07          |
| 006R0000001rerEIAQ | 2017-08-28T18:24:41.000Z | 140,000 | 2017-08-28T18:24:41.000Z | 140,000         | 0               | No Change               | 2013-04-05          |
| 006R0000001rerEIAQ | 2017-09-11T18:47:39.000Z | 120,000 | 2017-08-28T18:24:41.000Z | 140,000         | -14.0           | Down                    | 2013-04-05          |

Notice that Analytics partitions the records by opportunity ID and then sorts the records in ascending order based on the CreatedDate field within each partition. Analytics can now use the previous and next rows within each partition to determine changes in field values in the dataset.

### IN THIS SECTION:

#### computeRelative Parameters

When you define a computeRelative transformation, you set the action attribute to computeRelative. You also specify the parameters for the input source, partition-by field, sort field, and derived field definitions.

### computeRelative Parameters

When you define a computeRelative transformation, you set the action attribute to computeRelative. You also specify the parameters for the input source, partition-by field, sort field, and derived field definitions.

You can specify parameters in the following sections of the computeRelative node.

### **Parameters**

The following table describes the parameters in the parameters section.

| Parameter   | Required? | Value   |
|-------------|-----------|---|
| source      | Yes       | Node in the dataflow definition file that identifies the input source for this transformation.  |
| partitionBy | Yes       | API name of the field used to partition the records in the dataset. Specify one partition-by field only.  |
| orderBy     | Yes       | Field used to sort the records within each partition and the sort order: ascending (asc) or descending (desc). Specify one sort field only.  Example: |
|             |           | <pre>"orderBy": [</pre>   |

| Parameter      | Required? | Value  |
|----------------|-----------|--|
| computedFields | Yes       | A list of definitions for derived fields. Derived fields can be based on a source field or on a SAQL expression. |
|                |           | Example showing derived fields based on a source field and on a SAQL expression:                                 |
|                |           | <pre>"computedFields": [</pre>   |
|                |           | See computedFields.  |

# computedFields

The following table describes the attributes in the computedFields section.

| Parameter   | Required? | Value  |  |
|-------------|-----------|--|--|
| name        | Yes       | API name of the derived field to add to the dataset. The name must be uniquin the dataset.   |  |
|             |           | Note: If the name is not unique, the dataflow fails to run.  |  |
| label       | No        | The display name of the derived field that appears in the Analytics user interface.  Can be up to 255 characters. Defaults to the API name if not specified. |  |
| description | No        | Description of the derived field for information only.   |  |

| Parameter  | Required? | Value   |
|------------|-----------|---|
| expression | Yes       | Expression attributes used to calculate the value for the derived field. The expression can be based on input fields or other derived fields in the transformation. |
|            |           | Example:  |
|            |           | <pre>"expression": {     "sourceField": "CloseDate",     "offset": "previous()",     "default": "01-01-1970"</pre>  |
|            |           | See expression.   |

# expression

The following table describes the attributes in the expression section when creating a derived field based on a source field.

| Parameter   | Required? | Value  |
|-------------|-----------|--|
| sourceField | Yes       | API name of the input field from the source node that's used in the expression.  |
| offset      | Yes       | The function used in the expression. You can use the following functions:  |
|             |           | current()  |
|             |           | Gets the value from the current record.  |
|             |           | Example:   |
|             |           | "offset": "current()"  |
|             |           | first()  |
|             |           | Gets the value from the first record in the partition, like the first CreateDate for an opportunity.   |
|             |           | Example:   |
|             |           | "offset": "first()"  |
|             |           | next()   |
|             |           | Gets the value from the next record.   |
|             |           | Example:   |
|             |           | "offset": "next()"   |
|             |           | previous()   |
|             |           | Gets the value from the previous record.   |
|             |           | Example:   |
|             |           | "offset": "previous()"   |
|             |           | Note: Derived fields are computed in the order that they're defined. The calculation of a derived field can be based on the value from another |

| Parameter | Required?                     | Value   |
|-----------|-------------------------------|---|
|           |                               | derived field as long as it has already been defined. For example, $next()$ can't access the value of a derived field in the next row.  |
|           |                               | Tip: To get the correct results when using the previous () and next () functions, the computeRelative transformation requires you to sort the records.  |
| default   | Yes (for numeric fields only) | The default value if one can't be calculated. For example, you can specify a default value when no previous or next value exists. You can insert a constant value or current() as a default value.  Examples: |
|           |                               | "default": "3000-01-01T00:00:00.000Z"   |
|           |                               | "default": "current()"  |

The following table describes the attributes in the expression section when creating a derived field based on a SAQL expression.

| Parameter      | Required? | Value  |
|----------------|-----------|--|
| saqlExpression | Yes       | SAQL expression used to calculate the value for the derived field. The expression can be based on input fields or other derived fields in the transformation. You can use the offset functions current(),first(),next(), and previous() in the expression. |
|                |           | Example to calculate the percentage change from the previous amount to the current amount:   |
|                |           | <pre>"saqlExpression": "(current(Amount)-previous(Amount))/previous(Amount)*100"</pre>   |
|                |           | You can also use the SAQL case operator in the expression.   |
|                |           | Example to output <i>Up, Down</i> , or <i>No Change</i> values based on the change from the previous amount to the current amount:   |
|                |           | "saqlExpression": "case when<br>current(Amount)>previous(Amount) then \"Up\" when<br>current(Amount) <previous(amount) \"down\"<br="" then="">else \"No Change\" end"</previous(amount)>   |
| type           | Yes       | Analytics field type associated with the field. Valid types are Numeric and Text.  |
|                |           | Example:   |
|                |           | "type": "Text"   |

| Parameter | Required?                     | Value  |
|-----------|-------------------------------|--|
| scale     | No                            | The number of digits to the right of the decimal point in a numeric value.  Example: |
|           |                               | "scale": 2   |
| default   | Yes (for numeric fields only) | The default value if one can't be calculated.  Example:                              |
|           |                               | "default": "null"  |

#### delta Transformation

The delta transformation calculates changes in the value of a measure column in a dataset over a period of time. The delta transformation generates an output column in the dataset to store the delta for each record. Create deltas to make it easier for business analysts to include them in queries.



Note: The delta transformation isn't supported when null measure handling is enabled and dataflows containing delta transformations fail. Use computeRelative and computeExpression transformations instead in your dataflows, to calculate changes in measure values over time. For an example, see Enable Null Measure Handling on page 99.

The delta transformation calculates each delta value by comparing the value in each record with the value in the previous record. Because records might not be sorted, the delta transformation orders the records before computing the delta values. To do this, the transformation sorts the data by the specified dimension, and then by the specified epoch date column.



Note: When Analytics processes dates, it creates the following epoch date columns for each date processed:

| Epoch Time Column                               | Description  |
|---|--|
| <date_column_name>_sec_epoch</date_column_name> | For example, if the date column is CloseDate, the generated epoch second column is CloseDate_sec_epoch. This column provides the number of seconds that have elapsed since January 1, 1970 (midnight UTC/GMT). |
| <date_column_name>_day_epoch</date_column_name> | For example, if the date column is CloseDate, the generated epoch day column is CloseDate_day_epoch. This column provides the number of days that have elapsed since January 1, 1970 (midnight UTC/GMT).       |



Example: Let's look at an example. You want to create an OppHistoryDelta dataset that contains opportunity history from the OpportunityHistory object and also calculates the deltas for opportunity amounts.

The OpportunityHistory object contains the following data.

| OpportunityId | CloseDate | StageName | Amount |
|---------------|-----------|-----------|--------|
| 1             | 1/1/2014  | New       | 100    |
| 2             | 1/1/2014  | New       | 100    |

| OpportunityId | CloseDate | StageName | Amount |
|---------------|-----------|-----------|--------|
| 2             | 2/1/2014  | ClosedWon | 200    |
| 1             | 3/1/2014  | ClosedWon | 100    |

You create the following dataflow definition.

```
"Extract Opportunities": {
   "action": "sfdcDigest",
   "parameters": {
      "object": "OpportunityHistory",
      "fields": [
        { "name": "OpportunityId" },
         { "name": "CloseDate" },
         { "name": "StageName" },
         { "name": "Amount" }
      ]
},
"Calculate Delta": {
  "action": "delta",
   "parameters": {
      "dimension": "OpportunityId",
      "epoch": "CloseDate day epoch",
      "inputMeasure": "Amount",
      "outputMeasure": "DeltaAmount",
      "source": "Extract Opportunities"
},
"Register_Dataset": {
  "action": "sfdcRegister",
   "parameters": {
      "alias": "OppHistoryDelta",
      "name": "OppHistoryDelta",
      "source": "Calculate Delta"
}
```

To calculate the delta values for each opportunity amount, the delta transformation sorts the records by the dimension (Opportunityld) first, and then by time (CloseDate\_day\_epoch) as shown here.

| OpportunityID | CloseDate | StageName | Amount |
|---------------|-----------|-----------|--------|
| 1             | 1/1/2014  | New       | 100    |
| 1             | 3/1/2014  | ClosedWon | 100    |
| 2             | 1/1/2014  | New       | 100    |
| 2             | 2/1/2014  | ClosedWon | 200    |

After the records are sorted, for each dimension (OpportunityId), the transformation compares the previous value to the next value to determine the delta for each record. The transformation creates the following dataset.

| OpportunityId | CloseDate | StageName | Amount | DeltaAmount |
|---------------|-----------|-----------|--------|-------------|
| 1             | 1/1/2014  | New       | 100    | 0           |
| 1             | 3/1/2014  | ClosedWon | 100    | 0           |
| 2             | 1/1/2014  | New       | 100    | 0           |
| 2             | 2/1/2014  | ClosedWon | 200    | 100         |

For the first record of each dimension, the transformation inserts '0' for the delta value.



**Note:** If an opportunity contains multiple changes on the same day, you must sort the records on a shorter time interval. In this case, sort on CloseDate\_sec\_epoch column. Otherwise, records might not be sorted correctly, which means delta values will be incorrect.

### IN THIS SECTION:

#### delta Parameters

When you define a delta transformation, you set the action attribute to delta and specify the parameters.

### delta Parameters

When you define a delta transformation, you set the action attribute to delta and specify the parameters.

The following table describes the input parameters:

| Parameter     | Required? | Value  |
|---------------|-----------|--|
| dimension     | Yes       | Dimension column in the dataset used to sort records when calculating the delta values.                    |
| epoch         | Yes       | Epoch date column in the dataset used to sort records within each dimension when calculating delta values. |
| inputMeasure  | Yes       | Measure column on which you want to calculate the delta.   |
| outputMeasure | Yes       | Name of the output column that contains the delta value.   |

| Parameter | Required? | Value   |
|-----------|-----------|---|
| source    | Yes       | Node in the dataflow definition file that contains the dataset to which you want to add the delta column. |

#### SEE ALSO:

delta Transformation

### digest Transformation

The digest transformation extracts replicated data in a dataflow. Use it to extract data replicated from your local Salesforce org, or data replicated through an external connection.



Example: Here's an example. Let's say you're extracting opportunity data from your company's org in Arizona using a Salesforce external connection. To use this data in your dataflow, add a digest node specifying the connection name, object, and fields.

```
"Extract Arizona Opportunities": {
    "action": "digest",
   "parameters": {
        "connectionName": "Arizona Sales",
        "object": "Opportunity",
        "fields": [
        {"name": "CloseDate"},
        {"name": "Amount"},
        {"name": "StageName"},
        {"name": "Name"}
     ],
    }
 },
```

### IN THIS SECTION:

### digest Parameters

When you define a digest transformation, you set the action attribute to digest and specify the parameters.

### digest Parameters

When you define a digest transformation, you set the action attribute to digest and specify the parameters.

The following table describes the input parameters:

| Parameter      | Required? | Value   |
|----------------|-----------|---|
| connectionName | Yes       | Name of the connection used to replicate the data.        |
| object         | Yes       | The replicated object that you want to extract data from. |
| fields         | Yes       | An array of names of the fields that you want to extract. |

### dim2mea Transformation

The dim2mea transformation creates a new measure based on a dimension. The transformation adds the new measure column to the dataset. The transformation also preserves the dimension to ensure that existing lenses and dashboards don't break if they use the dimension.

If the transformation cannot create a measure from a dimension, the transformation populates the measure with the specified default value. If no default value is provided, the transformation inserts '0.'



**Example:** Let's look at an example. Your Opportunity object contains a custom text field called StageVal\_\_c, which contains the opportunity amount at a particular stage. Because this is a text field, Analytics loads this data as a dimension. However, you'd like to create a measure from this dimension to enable users to perform calculations on stage amount.

You create the following dataflow definition.

```
"Extract Opportunities": {
      "action": "sfdcDigest",
      "parameters": {
         "object": "Opportunity",
         "fields": [
            { "name": "Id" },
            { "name": "Name" },
            { "name": "Amount" },
            { "name": "StageName" },
            { "name": "CloseDate" },
            { "name": "AccountId" },
            { "name": "StageVal c" }
      }
   },
   "Create Measure From Dimension": {
      "action": "dim2mea",
      "parameters": {
         "dimension": "StageVal c",
         "measure": "StageValue",
         "measureDefault": "0",
         "measureType": "long",
         "source": "Extract Opportunities"
      }
   },
   "Register The Dataset": {
      "action": "sfdcRegister",
      "parameters": {
         "alias": "OpportunitiesWithConvertedMeasure",
         "name": "OpportunitiesWithConvertedMeasure",
         "source": "Create Measure From Dimension"
   }
}
```

### IN THIS SECTION:

#### dim2mea Parameters

When you define a dim2mea transformation, you set the action attribute to dim2mea and specify the parameters.

### dim2mea Parameters

When you define a dim2mea transformation, you set the action attribute to dim2mea and specify the parameters.

The following table describes the input parameters:

| Parameter       | Required? | Value  |
|-----------------|-----------|--|
| dimension       | Yes       | Dimension column in the dataset from which you want to create the measure.   |
| measure         | Yes       | Name of the output measure. This column name must be unique within the dataset. Do not use the same name as the dimension because the transformation preserves the dimension in the dataset. |
|                 |           | Note: The measure name is also the new field's API name, so it:  |
|                 |           | <ul> <li>Can contain only alphanumeric<br/>and underscore characters.</li> </ul>   |
|                 |           | <ul> <li>Must begin with a letter.</li> </ul>  |
|                 |           | • Can't end with an underscore.  |
|                 |           | <ul> <li>Can't contain 2 consecutive<br/>underscore characters, except<br/>when ending with "c"<br/>(case-sensitive).</li> </ul>   |
| measure Default | Yes       | Default value for the measure if the transformation is unable to create a measure from a dimension.  |
| measureType     | Yes       | Type of measure. Valid value: "long"   |
| source          | Yes       | Node in the dataflow definition file that contains the dataset to which you want to add the measure.   |

### SEE ALSO:

dim2mea Transformation

## edgemart Transformation

The edgemart transformation gives the dataflow access to an existing, registered dataset, which can contain Salesforce data, external data, or a combination of the two. Use this transformation to reference a dataset so that its data can be used in subsequent transformations in the dataflow. You can use this transformation and the augment transformation together to join an existing dataset with a new dataset.



**Example:** Let's look at an example. You would like to compare the final sales amount against the opportunity amount to determine if heavy discounts were offered to close deals. You previously created and registered the FinalSales dataset. The FinalSales dataset contains the final sale amount of each opportunity that was closed and won.

**Table 2: FinalSales Dataset** 

| OppID | UpdateDate | StageName | SaleAmount |
|-------|------------|-----------|------------|
| 1     | 1/1/2014   | ClosedWon | 100,000    |
| 2     | 11/1/2013  | ClosedWon | 150,000    |
| 3     | 2/1/2014   | ClosedWon | 200,000    |

You would now like to create a dataset that contains opportunity information from the Opportunity object. Then, you would like to join the data from the existing FinalSales dataset with the Opportunity dataset.

You create the following dataflow definition.

```
"Extract Opportunities": {
    "action": "sfdcDigest",
    "parameters": {
        "object": "Opportunity",
        "fields": [
            { "name": "Id" },
            { "name": "Name" },
            { "name": "Amount" }
        ]
    }
},
"Extract_Final_Sales_Data": {
    "action": "edgemart",
    "parameters": { "alias": "FinalSales" }
},
"Combine Opportunities FinalSales": {
    "action": "augment",
    "parameters": {
        "left": "Extract Opportunities",
        "left key": [ "Id" ],
        "relationship": "Opportunity",
        "right": "Extract_Final_Sales_Data",
        "right key": [ "OppID" ],
        "right select": [ "SaleAmount" ]
},
"Register_Opportunity_FinalSales_Dataset": {
    "action": "sfdcRegister",
    "parameters": {
        "alias": "OpportunityVersusFinalSales",
        "name": "OpporunityVersusFinalSales",
        "source": "Combine Opportunities FinalSales"
}
```

### IN THIS SECTION:

#### edgemart Parameters

When you define an edgemart transformation, you set the action attribute to edgemart and specify the parameters.

### edgemart Parameters

When you define an edgemart transformation, you set the action attribute to edgemart and specify the parameters.

The following table describes the input parameter:

| Parameter | Required? | Value   |
|-----------|-----------|---|
| alias     | Yes       | API name of the dataset from which you want to extract data. To determine the API name of a dataset, edit the dataset and view the system name. |

#### SEE ALSO:

edgemart Transformation

### export Transformation

The export transformation creates a data file and a schema file from data in a specified source node in your dataflow. After the dataflow runs, Einstein Discovery users can access these files through the public API.



Note: The export transformation is available in Salesforce orgs that have Einstein Discovery enabled.

When you add an export transformation to a dataflow, you specify a source and a target parameter. The source is the node in the dataflow that outputs the data you want to export, and the target is Einstein Discovery. You also specify a user, which determines who can access the data in Einstein Discovery.



**Example:** Here's an example. Let's say your dataflow contains an sfdcDigest node, ExtractOpportunities, which extracts all fields from the Opportunity object. To make this data available in Einstein Discovery, add an export node to the dataflow, specifying the source node and a target of EinsteinDiscovery.

### export Node in Dataflow Editor



### export Node in Dataflow JSON

```
"ExportOpportunities": {
    "action": "export",
    "parameters": {
        "source": "ExtractOpportunities",
        "target": "EinsteinDiscovery",
        "userId": "005R0000000IUNDIA4"
    }
}
```



Note: When you add an export node in the dataflow editor, you can search for the user by name in the User field.

#### IN THIS SECTION:

#### export Parameters

Add an export transformation to a dataflow either in the dataflow editor, or directly in the JSON dataflow definition file. The parameters you specify are the same for both methods.

#### export Parameters

Add an export transformation to a dataflow either in the dataflow editor, or directly in the JSON dataflow definition file. The parameters you specify are the same for both methods.



Note: The export transformation is available in Salesforce orgs that have Einstein Discovery enabled.

To add an export transformation in the dataflow editor, click



To add an export transformation in the JSON definition file, add a node and set the action attribute to export.

The following table describes the input parameters:

| Parameter                              | Required? | Value   |
|--|-----------|---|
| In dataflow editor: <b>Source Node</b> | Yes       | Node in the dataflow that identifies the dataset that you want to export. |
| In dataflow JSON: source               |           | This is the input source for this transformation.                         |

| Parameter                         | Required? | Value  |
|-----------------------------------|-----------|--|
| In dataflow editor: <b>Target</b> | Yes       | The destination for the exported data.                                     |
| In dataflow JSON: target          |           | In the dataflow editor, select Einstein Discovery.                         |
|                                   |           | In the dataflow definition file, specify EinsteinDiscovery.                |
| In dataflow editor: <b>User</b>   | Yes       | The Id of the user who can access the data in Einstein Discovery.          |
| In dataflow JSON: userId          |           | In the dataflow editor, you can search for the user by name in this field. |

#### filter Transformation

The filter transformation removes records from an existing dataset. You define a filter condition that specifies which records to retain in the dataset.



Example: Let's look at an example. You would like to create a dataset that contains only opportunities that were Closed Won. First, you extract all opportunities from the Opportunity object. Next, you filter the records so that you only include opportunities with a Closed Won stage name.

You create the following dataflow definition.

```
"Extract Opportunities": {
      "action": "sfdcDigest",
      "parameters": {
         "object": "Opportunity",
         "fields": [
            { "name": "Id" },
            { "name": "Name" },
            { "name": "Amount" },
            { "name": "StageName" },
            { "name": "CloseDate" },
            { "name": "AccountId" },
            { "name": "OwnerId" }
      }
   "Filter Opportunities": {
      "action": "filter",
      "parameters": {
         "filter": "StageName:EQ:Closed Won",
         "source": "Extract Opportunities"
   },
   "Register_My_Won_Oppportunities_Dataset": {
      "action": "sfdcRegister",
      "parameters": {
         "alias": "MyWonOpportunities",
         "name": "MyWonOpportunities",
         "source": "Filter Opportunities"
   }
}
```

### IN THIS SECTION:

#### filter Parameters

When you define a filter transformation, you set the action attribute to filter and specify the parameters.

### filter Expression Syntax

You create a filter expression in the filter transformation based on one or more dimensions in a dataset.

#### filter Parameters

When you define a filter transformation, you set the action attribute to filter and specify the parameters.

The following table describes the input parameters:

| Parameter | Required? | Value   |
|-----------|-----------|---|
| filter    | Yes       | Filter expression that specifies which records to include in the new dataset. See filter Expression Syntax. |
| source    | Yes       | Node in the dataflow definition file that contains the dataset that you want to filter.                     |

#### SEE ALSO:

#### filter Transformation

### filter Expression Syntax

You create a filter expression in the filter transformation based on one or more dimensions in a dataset.



#### Note:

- String comparisons in a filter expression are case-sensitive.
- When you filter on a Salesforce ID field extracted in an upstream sfdcDigest node, use 18-character ID values in your filter expression. sfdcDigest nodes extract 18-character IDs, and the filter transformation performs string comparisons on ID fields.

Example: "filter": "RecordTypeId:EQ:0126A0000016QfyQAE"

You can use the following types of filter expressions:

| Filter Expression Syntax | Description  |
|--------------------------|--|
| dim:EQ:value             | True if the dimension and value are equal.   |
|                          | <pre>Example: "filter": "StageName:EQ:Closed Won"</pre>                            |
| dim:R:val0:val1          | True if the left dimension falls within the specified range between val0 and val1. |
|                          | Example: "filter": "EmployeeId:R:100:1000"   |

| Filter Expression Syntax  | Description  |
|---------------------------|--|
| dim:R:val                 | True if the dimension is greater than or equal to the value based on binary sort order. For example, this is true when the dimension is 'City' and the value is 'Anderson' because ' 'City' > 'Anderson').   |
|                           | <pre>Example: "filter": "LastName:R:Li"</pre>  |
| dim:R::val                | True if the dimension is less than or equal to the value based on binary sort order.   |
|                           | <pre>Example: "filter": "LastName:R::Levy"</pre>   |
| dim:N:val                 | True if the dimension and value are not equal.   |
|                           | <pre>Example: "filter": "RoleName:N:Manager"</pre>   |
| dim:EQ:val1 val2          | True if the dimension equals values val1 or val2. This filter expression uses the logical OR operator ( ). You can compare the dimension value against more than 2 values. For example, to compare against 3 values, use the following syntax: dim1:EQ:val1 val2 val3.                   |
|                           | <pre>Example: "filter": "Lead Status:EQ:Open Contacted"</pre>  |
| dim1:EQ:val1,dim2:EQ:val2 | True if dimension dim1 equals value val1 and dimension dim2 equals value val2. This filter expression uses the logical AND operator (,). You can compare more than 2 dimensions. For example, to compare 3 dimensions, use the following syntax: dim1:EQ:val1,dim2:EQ:val2,dim3:EQ:val3. |
|                           | Example: "filter": "Lead   |
|                           | Status:EQ:Qualified,Rating:EQ:Hot"   |



Note: If you are adding a filter node in the dataflow editor, enter the filter expression without "filter": at the start and without quotes.

Example: StageName: EQ: Closed Won

SEE ALSO:

filter Transformation

### flatten Transformation

The flatten transformation flattens hierarchical data. For example, you can flatten the Salesforce role hierarchy to implement row-level security on a dataset based on the role hierarchy.

When you configure the flatten transformation to flatten a hierarchy, you specify the field that contains every node in the hierarchy and the field that contains their corresponding parent based on the hierarchy. The flatten transformation generates one record for each hierarchy node, which we refer to as the "self ID." Each record contains two generated columns that store the hierarchy for each self ID

node. One column contains a comma-separated list of all ancestors for each node in the hierarchy. The other column contains the hierarchy path.

See the Roles and RolePath columns in the following flattened dataset to see how ancestors are stored.

| Role ID (Self ID) | Role Name          | Parent Role ID | Roles          | RolePath       |
|-------------------|--------------------|----------------|----------------|----------------|
| 1                 | Salesperson 1      | 10             | 10, 20, 30     | \10\20\30      |
| 2                 | Salesperson 2      | 10             | 10, 20, 30     | \10\20\30      |
| 3                 | Salesperson 3      | 11             | 11, 20, 30     | \11\20\30      |
| 10                | Regional Manager 1 | 20             | 20, 30         | \20\30         |
| 11                | Regional Manager 2 | 20             | 20, 30         | \20\30         |
| 20                | Vice President 1   | 30             | 30             | \30            |
| 21                | Vice President 2   | 30             | 30             | \30            |
| 30                | CEO                | Not applicable | Not applicable | Not applicable |

You can also configure the flatten transformation to include the self ID node in the generated hierarchy columns. The following dataset shows the self ID in bold.

| Role ID (Self ID) | Role Name          | Parent Role ID | Roles                 | RolePath             |
|-------------------|--------------------|----------------|-----------------------|----------------------|
| 1                 | Salesperson 1      | 10             | <b>1</b> , 10, 20, 30 | \ <b>1</b> \10\20\30 |
| 2                 | Salesperson 2      | 10             | <b>2</b> ,10, 20, 30  | \ <b>2</b> \10\20\30 |
| 3                 | Salesperson 3      | 11             | <b>3</b> ,11, 20, 30  | \ <b>3</b> \11\20\30 |
| 10                | Regional Manager 1 | 20             | <b>10</b> ,20, 30     | <b>\10</b> \20\30    |
| 11                | Regional Manager 2 | 20             | <b>11</b> ,20, 30     | \ <b>11</b> \20\30   |
| 20                | Vice President 1   | 30             | <b>20</b> ,30         | <b>\20</b> \30       |
| 21                | Vice President 2   | 30             | <b>21</b> ,30         | \ <b>21</b> \30      |
| 30                | CEO                | Not applicable | 30                    | 30                   |



Example: Let's look at an example. You want to create a dataset that contains all opportunities. For each opportunity, you want to include user and role information about the opportunity owner. Also, to implement row-level security based on the role hierarchy, each opportunity record must also contain a list of all ancestors above each opportunity owner based on the role hierarchy. To generate the list of ancestors, use the flatten transformation to flatten the role hierarchy.

You create the following dataflow definition file:

```
"Extract_Opportunity": {
  "action": "sfdcDigest",
   "parameters": {
```

```
"object": "Opportunity",
      "fields": [
        { "name": "Id" },
        { "name": "Name" },
        { "name": "Amount" },
        { "name": "StageName" },
        { "name": "AccountId" },
         { "name": "OwnerId" }
},
"Extract User": {
  "action": "sfdcDigest",
   "parameters": {
      "object": "User",
      "fields": [
        { "name": "Id" },
        { "name": "Name" },
        { "name": "Department" },
         { "name": "UserRoleId" }
     ]
  }
"Extract_UserRole": {
   "action": "sfdcDigest",
   "parameters": {
     "object": "UserRole",
      "fields": [
        { "name": "Id" },
        { "name": "Name" },
         { "name": "ParentRoleId" }
     ]
},
"Flatten UserRole": {
  "action": "flatten",
   "parameters": {
      "source": "Extract_UserRole",
      "self_field": "Id",
     "parent_field": "ParentRoleId",
      "multi field": "Roles",
      "path field": "RolePath",
      "include_self_id":false
},
"Augment_User_FlattenUserRole": {
  "action": "augment",
   "parameters": {
     "left": "Extract User",
     "left key": [ "UserRoleId" ],
     "relationship": "Role",
     "right": "Flatten UserRole",
      "right_key": [ "Id" ],
      "right_select": [
```

```
"Id",
         "Name",
         "Roles",
         "RolePath"
      ]
},
"Augment_Opportunity_UserWithRoles": {
   "action": "augment",
   "parameters": {
     "left": "Extract Opportunity",
      "left key": [ "OwnerId" ],
      "right": "Augment User FlattenUserRole",
      "relationship": "Owner",
      "right_select": [
         "Name",
         "Department",
         "Role.Id",
         "Role.Name",
         "Role.Roles",
         "Role.RolePath"
      "right key": [ "Id" ]
   }
},
"Register OpportunityWithRoles_Dataset": {
   "action": "sfdcRegister",
   "parameters": {
      "alias": "OppRoles",
      "name": "OppRoles",
      "source": "Augment_Opportunity_UserWithRoles",
     "rowLevelSecurityFilter": "'Owner.Role.Roles' == \"$User.UserRoleId\" || 'OwnerId'
== \"$User.Id\""
   }
}
}
```

To flatten the Salesforce role hierarchy, the flatten transformation uses the following input fields from the UserRole object.

#### ld

Id identifies each node in the Salesforce role hierarchy.

#### **ParentRoleId**

ParentRoleId identifies the parent as defined in the role hierarchy.

After traversing through each parent-child relationship in the UserRole object, the flatten transformation generates one record for each role ID. Each record contains all ancestor roles for each role in the hierarchy. The flatten transformation generates two output columns—Roles and RolePath—to store all ancestor roles for each role.

#### IN THIS SECTION:

### flatten Parameters

When you define a flatten transformation, you set the action attribute to flatten and specify the parameters.

### flatten Parameters

When you define a flatten transformation, you set the action attribute to flatten and specify the parameters.

The following table describes the input parameters:

| Parameter       | Required? | Value  |
|-----------------|-----------|--|
| include_self_id | No        | Indicates whether to include the self ID node in the generated multi_field and path_field columns. Valid values are false (default) and true.  |
| self_field      | Yes       | Name of the input field that identifies each node in the hierarchy.  |
| parent_field    | Yes       | Name of the input field that identifies the direct parent of each node in the hierarchy. For example, the Regional Manager 1 role is the parent of the Salesperson 1 role in a role hierarchy.   |
| multi_field     | Yes       | Name of the multi-value output field that contains a list of all ancestors in the hierarchy, in order from the lowest to the highest level. The flatten transformation creates this field and generates the list of ancestors for each node in the hierarchy. For example, for Salesperson 1 role, the hierarchy of ancestors is: Sales Manager 1, Regional Manager 1, Vice President 1, CEO.  |
| path_field      | Yes       | A string representation of the multi-field field, separated by backslashes. This output field contains the hierarchical path of all ancestors in the hierarchy, in order from the lowest to the highest level. The flatten transformation creates this field and generates the ancestry path for each node in the hierarchy. For example, for a salesperson role in a role hierarchy, the value is: Sales Manager 1\Regional Manager 1\Vice President 1\CEO. |
| source          | Yes       | Node in the dataflow definition file that contains the hierarchical data that you want to flatten. This node is the input source for this transformation and it must contain the input fields mapped to self_field and parent_field.   |



**Note**: By default, the multi\_field and path\_field fields are created as system fields, which aren't visible in the user interface. To make the fields appear in the user interface, add a schema section to the flatten transformation and set the IsSystemField metadata attribute to false for each field in the transformation. The schema section is shown in bold in this sample JSON.

```
"label": "Roles",
            "isSystemField": false
          },
          {
            "name": "RolePath",
            "label": "RolePath",
            "isSystemField": false
        1
      }
    ]
  },
  "action": "flatten",
  "parameters": {
    "source": "Extract UserRole",
    "self field": "Id",
    "parent_field": "ParentRoleId",
    "multi field": "Roles",
    "path field": "RolePath",
    "include self id": false
},
```

For more information about overriding metadata using a schema section in a transformation, see Overriding Metadata Generated by a Transformation.

SEE ALSO:

flatten Transformation

### sfdcDigest Transformation

The sfdcDigest transformation generates a dataset based on data that it extracts from a Salesforce object. You specify the Salesforce object and fields from which to extract data. You might choose to exclude particular fields that contain sensitive information or that aren't relevant for analysis.

When you upload the dataflow definition file, Analytics validates access to Salesforce objects and fields based on the user profile of the Integration User. If the user profile does not have read access to a field or object, the upload fails.

At run time, Analytics runs the dataflow as the Integration User. Again, Analytics validates access to the objects and fields based on the profile of the Integration User. For example, if the dataflow tries to extract data from a custom field on which the Integration User does not have read access, the dataflow job fails.

Note: The Integration User is a preconfigured user that is created when Analytics is enabled in your organization. If you or the Integration User need permission on a Salesforce object or field, ask the administrator to grant access.

For more information about preconfigured users in Analytics, see the Analytics Security Implementation Guide.

**Example**: Let's look at an example. You would like to create a dataset that contains all opportunities from the Opportunity object. You create the following dataflow definition.

```
{
   "Extract_Opportunities": {
      "action": "sfdcDigest",
      "parameters": {
```

```
"object": "Opportunity",
         "fields": [
            { "name": "Id" },
            { "name": "Name" },
            { "name": "Amount" },
            { "name": "StageName" },
            { "name": "CloseDate" },
            { "name": "AccountId" },
            { "name": "OwnerId" },
            { "name": "OpportunitySupportTeamMembers c" }
         ]
      }
   },
   "Register Opportunities Dataset": {
      "action": "sfdcRegister",
      "parameters": {
         "alias": "Opportunities",
         "name": "Opportunities",
         "source": "Extract Opportunities"
   }
}
```

### Considerations When Using the sfdcDigest Transformation

- Consider dataset storage limits when extracting data. For example, a dataset can contain a maximum of 5,000 fields, so be selective when choosing fields. See Analytics Limits.
- The sfdcDigest transformation runs a SOQL query to extract data from a Salesforce object, and so is subject to SOQL limits. If the query exceeds any of these limits, it may return no results or cause the dataflow job to fail. For example, The length of the SOQL query cannot exceed 20,000 characters. To reduce the SOQL query length, consider breaking up the extract into two or more sfdcDigest transformations and then use the augment transformation to combine the results. For example, you might create one sfdcDigest transformation to extract half of the fields and create another sfdcDigest transformation to extract the remaining fields. See SOQL and SOSL Limits.
- The sfdcDigest transformation can extract data from Salesforce Big Objects, but incremental extract isn't supported and filtering is possible only on primary key fields.

### IN THIS SECTION:

#### Filtering Records Extracted from a Salesforce Object

Add a filter to the sfdcDigest transformation to extract a subset of all records from a Salesforce object. You can filter records to reduce the number of extracted and processed records, exclude records that contain irrelevant or sensitive data, and increase dataflow performance.

### Overriding Salesforce Field Metadata

You can override the field metadata that the sfdcDigest transformation extracts from a Salesforce object to make the data appear differently in a dataset. For example, Analytics can add a default value to records that have missing values for a field.

### Unsupported Salesforce Objects and Fields in Analytics

The sfdcDigest transformation can't extract data from all Salesforce objects and fields. Consider these limitations before configuring the extraction of Salesforce objects.

### sfdcDigest Parameters

When you define an sfdcDigest transformation, you set the action attribute to sfdcDigest and specify the parameters for the object and fields that you want to extract. Optionally, you can also specify parameters to filter the records extracted from the Salesforce object.

### Filtering Records Extracted from a Salesforce Object

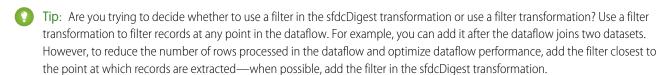
Add a filter to the sfdcDigest transformation to extract a subset of all records from a Salesforce object. You can filter records to reduce the number of extracted and processed records, exclude records that contain irrelevant or sensitive data, and increase dataflow performance.

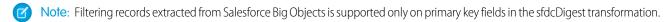
A filter consists of one or more filter conditions, where each filter condition compares a field value to a value. For example, Amount >= 1000000. You can also apply SOQL functions on the field value in a filter condition, like CALENDAR\_YEAR (CreatedDate) = 2011. You can add multiple filter conditions using logical operators AND, OR, and NOT. You can also use a backslash (\) to escape double quotes included in strings.

The sfdcDigest transformation extracts all records for which the filter is true. If you configured the sfdcDigest transformation for incremental extraction, the filter applies to data extracted during the incremental run only—Analytics doesn't apply the filter to records that were previously loaded into the dataset. If you add an invalid filter, the dataflow fails at run time.

For each instance of sfdcDigest, you can use one of the following types of filters:

- Structured filter
- Advanced filter





#### IN THIS SECTION:

#### Structured Filter in sfdcDigest Transformation

You define a structured filter using JSON syntax.

### Advanced Filter in sfdcDigest Transformation

You define an advanced filter using a Salesforce Object Query Language (SOQL) WHERE clause expression. Use an advanced filter only if you are familiar with SOQL.

#### SEE ALSO:

sfdcDigest Transformation

### **Structured Filter in sfdcDigest Transformation**

You define a structured filter using JSON syntax.

A structured filter uses the following JSON syntax for each filter condition.

```
{
"field": "<field name>",
"operator": "<operator>",
```

```
"value": "<value>"|"["<value 1>", "<value 2>"]",
"isQuoted": true|false}
```

The value can be a number, date, string, list of strings, or date literal. Analytics automatically quotes strings unless you set isQuoted to true, which indicates that the string is already quoted.

You can use one of the following operators in a filter condition.

| Operator | Comment   |
|----------|---|
|          | Filter condition is true if the value in the field equals the specified value. String comparisons using the equals operator are case-insensitive.  Example: |
|          | <pre>"filterConditions": [     {       "field": "OwnerId",       "operator": "=",       "value": "0056A0000020jzDQAQ"      } ]</pre>                        |
| !=       | Filter condition is true if the value in the field does not equal the specified value.  |
|          | Example (using backslashes to escape double quotes in a string value):  |
|          | <pre>"filterConditions": [     {       "field": "Nicknamec",       "operator": "!=",       "value": "\"Sammy\""       } ]</pre>                             |
| >        | Filter condition is true if the value in the field is greater than the specified value.   |
|          | Example:  |
|          | <pre>"filterConditions": [      {         "field": "Amount",         "operator": "&gt;",         "value": "100000"      } ]</pre>                           |
| <        | Filter condition is true if the value in the field is less than the specified value.  |

# **Operator** Comment Example (using a date literal): "filterConditions": [ "field": "CloseDate", "operator": "<", "value": "THIS\_MONTH", "isQuoted": false ] >= Filter condition is true if the value in the field is greater than or equal to the specified value. Example: "filterConditions": [ { "field": "Amount", "operator": ">=", "value": "100000" ] <= Filter condition is true if the value in the field is less than or equal to the specified value. Example (using a SOQL function): "filterConditions": [ "field": "CALENDAR YEAR (CreatedDate)", "operator": "<=", "value": "2015", "isQuoted": true ] LIKE Filter condition is true if the value in the field matches the specified value. The LIKE operator is similar to the LIKE operator in SQL; it provides a mechanism for matching partial text strings and supports wildcards. The % and wildcards are supported for the LIKE operator. • The % wildcard matches zero or more characters. • The \_ wildcard matches exactly 1 character. • The LIKE operator is supported for string fields only. • The LIKE operator performs a case-insensitive match. • The LIKE operator supports escaping of special characters % or \_. Use a backslash (\) to escape special characters.

# Operator Comment Example: "filterConditions": [ "field": "FirstName", "operator": "LIKE", "value": "Chris%" ] IN Filter condition is true if the value in the field equals any one of the values in the specified list. You can specify a quoted or non-quoted list of values. If the list is quoted, set isQuoted to true. Example: "filterConditions": [ "field": "StageName", "operator": "IN", "value": ["Closed Won", "Closed Lost"] ] NOT IN Filter condition is true if the value in the field does not equal any of the values in the specified list. Example: "filterConditions": [ "field": "BillingState", "operator": "NOT IN", "value": ["California", "New York"] ] **INCLUDES** For picklist or multi-select picklist fields only. Filter condition is true if the value in the picklist field includes the specified value. Example: "filterConditions": [ "field": "BillingState", "operator": "INCLUDES", "value": ["California"] ]

| Operator | Comment  |
|----------|--|
| EXCLUDES | For picklist or multi-select picklist fields only. Filter condition is true if the value in the picklist field excludes the specified value.  Example: |
|          | <pre>"filterConditions": [     {       "field": "BillingState",       "operator": "EXCLUDES",       "value": ["California", "New York"]     } ]</pre>  |

Let's look at a few examples of structured filters.



Example: Let's look at an example with a basic structured filter. To perform pipeline analysis on opportunities in fiscal quarter 2 of fiscal year 2015, you create this dataflow definition file to create the relevant dataset.

```
"Extract Filtered Opportunities": {
   "action": "sfdcDigest",
   "parameters": {
      "object": "Opportunity",
      "fields": [
         { "name": "Id" },
         { "name": "Name" },
         { "name": "AccountId" },
         { "name": "Amount" },
         { "name": "StageName" },
         { "name": "CloseDate" },
         { "name": "OwnerId" },
         { "name": "FiscalYear" },
         { "name": "FiscalQuarter" },
         { "name": "SystemModstamp" }
      ],
      "filterConditions": [
               "field": "FiscalYear",
               "operator": "=",
               "value": "2015"
            },
               "field": "FiscalQuarter",
               "operator": "=",
               "value": "2"
     ]
"Register Opportunities Dataset": {
   "action": "sfdcRegister",
```

```
"parameters": {
        "alias": "Opportunities_2015Q2",
        "name": "Opportunities_2015Q2",
        "source": "Extract_Filtered_Opportunities"
    }
}
```

- Note: If you do not specify a logical operator for multiple filter conditions—as is the case in this example—Analytics applies AND between the conditions.
- **Example**: Let's look at an example of a structured filter with a logical operator. To help forecast expected revenue, you create this dataflow to view all opportunities that have either closed or have greater than 90% probability of closing.

```
"Extract Opportunities": {
  "action": "sfdcDigest",
   "parameters": {
      "object": "Opportunity",
      "fields": [
        { "name": "Id" },
         { "name": "Name" },
         { "name": "AccountId" },
         { "name": "Amount" },
         { "name": "StageName" },
         { "name": "CloseDate" },
         { "name": "OwnerId" },
         { "name": "Probability" },
         { "name": "FiscalYear" },
         { "name": "FiscalQuarter" }
      ],
      "filterConditions": [
            "operator": "OR",
            "conditions": [
                  "field": "StageName",
                  "operator": "=",
                  "value": "Closed Won"
               },
                  "field": "Probability",
                  "operator": ">=",
                  "value": "90"
               }
            ]
        }
     ]
"Register Opportunities Dataset": {
  "action": "sfdcRegister",
   "parameters": {
      "alias": "OpportunitiesExpectedToWin",
```

**Example:** Finally, let's look at an example of a structured filter with nested logical operators. You create this dataflow to view all opportunities that closed in the current fiscal quarter and are owned by either one of your two direct reports.

```
"Extract Opportunities": {
    "action": "sfdcDigest",
    "parameters": {
        "object": "Opportunity",
        "fields": [
            { "name": "Id" },
            { "name": "Name" },
            { "name": "AccountId" },
            { "name": "Amount" },
            { "name": "StageName" },
            { "name": "CloseDate" },
            { "name": "OwnerId" },
            { "name": "FiscalYear" },
            { "name": "FiscalQuarter" }
        "filterConditions": [
                "operator": "AND",
                "conditions": [
                    {
                         "field": "CloseDate",
                         "operator": "=",
                         "value": "THIS FISCAL QUARTER",
                         "isQuoted": false
                    },
                         "operator": "OR",
                         "conditions": [
                                 "field": "OwnerId",
                                 "operator": "=",
                                 "value": "0056A0000020jzDQAQ"
                             },
                             {
                                 "field": "OwnerId",
                                 "operator": "=",
                                 "value": "0056A0000020jzGQAQ"
                        ]
                    }
                ]
            }
       ]
```

```
"Register Opportunities Dataset": {
    "action": "sfdcRegister",
    "parameters": {
        "alias": "DirectReport Opportunities",
        "name": "DirectReport Opportunities",
        "source": "Extract Opportunities"
    }
}
```

### **Advanced Filter in sfdcDigest Transformation**

You define an advanced filter using a Salesforce Object Query Language (SOQL) WHERE clause expression. Use an advanced filter only if you are familiar with SOQL.



Example: Let's look at an example of an advanced filter. You want to extract only opportunity records that are owned by a specific user and that have either high value or a high probability of closing. You create this dataflow.

```
"Extract Filtered Opportunities": {
      "action": "sfdcDigest",
      "parameters": {
         "object": "Opportunity",
         "fields": [
            { "name": "Id" },
            { "name": "Name" },
            { "name": "AccountId" },
            { "name": "Amount" },
            { "name": "StageName" },
            { "name": "CloseDate" },
            { "name": "Probability" },
            { "name": "OwnerId" }
         ],
         "complexFilterConditions": "OwnerId = '0056A0000020jzDQAQ' AND (Amount >
100000 OR Probability > 75)"
   },
   "Register Opportunities Dataset": {
      "action": "sfdcRegister",
      "parameters": {
         "alias": "FilteredOpportunities",
         "name": "FilteredOpportunities",
         "source": "Extract Filtered Opportunities"
   }
```

#### Overriding Salesforce Field Metadata

You can override the field metadata that the sfdcDigest transformation extracts from a Salesforce object to make the data appear differently in a dataset. For example, Analytics can add a default value to records that have missing values for a field.

You can add the following field parameters to the sfdcDigest transformation node to override the field metadata:

- defaultValue
- type
- fiscalMonthOffset
- isYearEndFiscalYear
- firstDayOfWeek
- isMultiValue
- multiValueSeparator (not available in dataflow editor)
- precision
- scale

For a description of each of these field parameters, see Field Parameters. For information about using metadata attributes to configure dates, see Date Handling in Datasets.



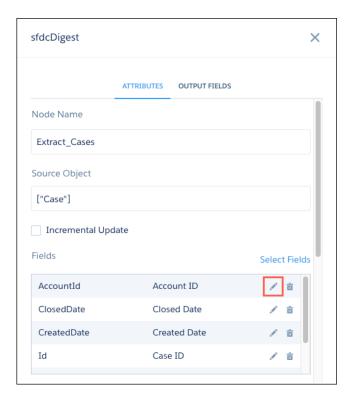
**Example:** Let's look at an example. You would like to override metadata extracted from the Opportunity object.

To override field metadata from the Opportunity object, you add the bold text to the sfdcDigest node in the datflow definition file

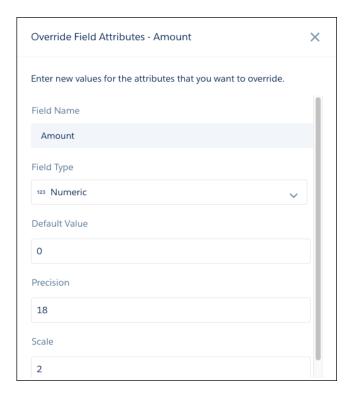
```
"Extract Opportunities": {
   "action": "sfdcDigest",
   "parameters": {
      "object": "Opportunity",
      "fields": [
         { "name": "Id" },
         { "name": "Name" },
            "name": "Amount",
            "defaultValue":0,
            "precision":18,
            "scale":2
         { "name": "StageName" },
            "name": "CloseDate",
            "fiscalMonthOffset":9,
            "firstDayOfWeek":2,
            "isYearEndFiscalYear":true
         { "name": "AccountId" },
         { "name": "OwnerId" },
            "name": "OpportunitySupportTeamMembers c",
            "type": "Text",
            "isMultiValue": true,
            "multiValueSeparator":",",
            "precision":255
      1
"Register_Opportunities_Dataset":{
   "action": "sfdcRegister",
```

```
"parameters":{
    "alias":"Opportunities",
    "name":"Opportunities",
    "source":"Extract_Opportunities"
}
}
```

If you're working in the dataflow editor, click the sfdcDigest node and then click next to the field that you want to change.



Update the field attributes, and then click **Save**.





**Note:** Changing a field's type attribute to anything other than Text can result in an error in your dataflow or unexpected values in your datasets. For example, if you change a text field to a numeric field, you see an error when you try to update the dataflow.

#### SEE ALSO:

### sfdcDigest Transformation

Unsupported Salesforce Objects and Fields in Analytics

The sfdcDigest transformation can't extract data from all Salesforce objects and fields. Consider these limitations before configuring the extraction of Salesforce objects.

For information about all Salesforce objects and fields, see the Object Reference for Salesforce and Lightning Platform.

### **Unsupported Objects**

The sfdcDigest transformation can't extract data from these Salesforce objects.

- ActivityMetric
- ApexEmailNotification
- AuthProvider
- BrandTemplate
- ChatterConversation
- ChatterConversationMember
- ChatterMessage

- ConnectedApplication
- ContentFolderLink
- ContentFolderMember
- ContentWorkspace
- ContentWorkspaceDoc
- ContentWorkspaceMember
- ContentWorkspacePermission
- CopyExport
- CorsWhitelistEntry
- DataAssessmentFieldMetric
- DataAssessmentMetric
- DataAssessmentValueMetric
- DataHubSetupData
- DataHubSetupDefinition
- DirectMessage
- DirectMessageFeed
- DirectMessageMember
- EmailCapture
- EmailDomainKey
- EmailServicesAddress
- EmailServicesFunction
- EmailTemplate
- EnvironmentHub
- EnvironmentHubInvitation
- EnvironmentHubMemberRel
- EventType
- EventTypeParameter
- ExternalString
- FeedPollChoice
- FeedPollVote
- KnowledgeArticle
- KnowledgeArticleVersion
- KnowledgeArticleVersionHistory
- KnowledgeArticleViewStat
- KnowledgeArticleVoteStat
- LeadChangeEvent
- LoginGeo
- LoginHistory
- ModelFactor
- NetworkActivityAudit

- NetworkModeration
- OrganizationProperty
- OrgWideEmailAddress
- PackageLicense
- PartnerNetworkSyncLog
- ReputationLevel
- ReputationLevelLocalization
- ReputationPointsRule
- SalesforcelqUser
- SampledEntity
- SandOmInfo
- SandOmInfoDetail
- SandOmObserver
- ScoreIntelligence
- SearchPromotionRule
- SecurityCustomBaseline
- SelfServiceUser
- SsoUserMapping
- TenantSecret
- TwoFactorInfo
- TwoFactorTempCode
- UserPackageLicense
- UserProvAccount
- UserProvAccountStaging
- UserProvisioningConfig
- UserProvisioningLog
- UserProvisioningRequest
- UserProvisioningRequestOwnerSharingRule
- UserProvisioningRequestShare
- UserProvMockTarget
- UserRecordAccess
- VerificationHistory
- VoiceUserLine
- VoiceUserLineOwnerSharingRule
- VoiceUserLineShare
- VoiceVendorLine
- VoiceVendorLineOwnerSharingRule
- VoiceVendorLineShare
- WebLink
- WebLinkLocalization

The sfdcDigest transformation cannot extract data from external objects created in Salesforce. External objects are similar to custom objects, except that they map to data located outside Salesforce.

If you include an unsupported or inaccessible object in the sfdcDigest transformation, the dataflow fails at run time with an error message.

## **Unsupported Fields**

The sfdcDigest transformation can't extract data from these fields.

| Object                | Unsupported Fields  |  |
|-----------------------|---|--|
| Account               | CleanStatus   |  |
| ActionPlanItem        | ltemld  |  |
| AuthSession           | <ul><li>LoginGeold</li><li>LoginHistoryld</li></ul>   |  |
| CaseArticle           | KnowledgeArticleId  |  |
| Contact               | <ul><li>CanAllowPortalSelfReg</li><li>CleanStatus</li></ul>   |  |
| ContentDocument       | Parentld  |  |
| CustomPersonp         | Title   |  |
| DocumentAttachmentMap | Parentld  |  |
| EmailMessage          | ActivityId  |  |
| EmailRoutingAddress   | EmailServicesAddressId  |  |
| EnvironmentHubMember  | EnvironmentHubld  |  |
| ExternalEventMapping  | EventId   |  |
| InstalledMobileApp    | ConnectedApplicationId  |  |
| Lead                  | CleanStatus   |  |
| KnowledgeArticle      | MasterLanguage  |  |
| Network               | <ul> <li>CaseCommentEmailTemplateId</li> <li>ChangePasswordEmailTemplateId</li> <li>ForgotPasswordEmailTemplateId</li> <li>WelcomeEmailTemplateId</li> </ul>  |  |
| Organization          | <ul> <li>SelfServiceEmailUserOnCaseCreationTemplateId</li> <li>SelfServiceNewCommentTemplateId</li> <li>SelfServiceNewPassTemplateId</li> <li>SelfServiceNewUserTemplateId</li> <li>WebToCaseAssignedEmailTemplateId</li> </ul> |  |

| Object                | Unsupported Fields  |
|-----------------------|---|
|                       | <ul><li>WebToCaseCreatedEmailTemplateId</li><li>WebToCaseEmailTemplateId</li><li>WebToLeadEmailTemplateId</li></ul> |
| PermissionSet         | <ul><li>PermissionsEditEvent</li><li>PermissionsEditTask</li></ul>  |
| PermissionSetLicense  | <ul><li>MaximumPermissionsEditEvent</li><li>MaximumPermissionsEditTask</li></ul>                                    |
| Profile               | <ul><li>PermissionsEditEvent</li><li>PermissionsEditTask</li></ul>  |
| ThirdPartyAccountLink | SsoProviderId   |
| User                  | <ul><li>LastPasswordChangeDate</li><li>UserPreferencesEnableVoicePilot</li></ul>                                    |
| WorkBadge             | RewardId  |
| WorkBadgeDefinition   | RewardFundId  |

If you include a field with an unsupported field in the sfdcDigest transformation, the dataflow ignores the field.

In addition, Salesforce recommends that you do not extract data from the MayEdit field of the Account object. Extracting data from this field significantly decreases performance and can cause the dataflow to fail.

## **Unsupported Field Types**

The sfdcDigest transformation can't extract data from fields with these field types.

- base64
- composite (like address and location)
- data category group reference
- encrypted string

If you include a field with an unsupported field type in the sfdcDigest transformation, the dataflow ignores the field.

## SEE ALSO:

## sfdcDigest Transformation

## sfdcDigest Parameters

When you define an sfdcDigest transformation, you set the action attribute to sfdcDigest and specify the parameters for the object and fields that you want to extract. Optionally, you can also specify parameters to filter the records extracted from the Salesforce object.

You can specify parameters in the following sections of the sfdcDigest node: parameters, fields, and filterConditions.

#### **Parameters**

The following table describes the parameters in the parameters section.

| Parameter               | Required? | Value   |
|-------------------------|-----------|---|
| object                  | Yes       | API name of the Salesforce object from which you want to extract data. This object is the input source for this transformation. The sfdcDigest transformation doesn't support extraction from all Salesforce objects.   |
| incremental             | No        | Performs an incremental extraction, which extracts only changes to the Salesforce object since the last dataflow run. Valid values: true or false.  |
|                         |           | Note: Incremental extraction:   |
|                         |           | <ul> <li>Is available if you have enabled replication.</li> </ul>   |
|                         |           | <ul> <li>Isn't supported for Salesforce big objects.</li> </ul>   |
| fullRefreshToken        | No        | Performs a one-time full extraction to synchronize the data in the dataset with data in the Salesforce object. Specify any value for this parameter.  |
|                         |           | After the full extraction, the dataflow performs an incremental extraction each time thereafter even though the fullRefreshToken parameter is included in the dataflow definition. To run a full extraction again, change the value of the fullRefreshToken parameter to a different value. |
|                         |           | Note: Incremental extraction is available if you have enabled replication.  |
| fields                  | Yes       | An array of names of all fields from which you want to extract data from the specified Salesforce object. The sfdcDigest transformation doesn't support extraction from all field types.  |
|                         |           | See Field Attributes.   |
| filterConditions        | No        | A filter that restricts the records extracted from the specified Salesforce object. The sfdcDigest transformation extracts all records from the Salesforce object for which the filter is true. You can specify a structured or advanced filter.  |
|                         |           | See Filter Conditions Parameters.   |
| complexFilterConditions | No        | For advanced filters only. A SOQL WHERE clause used to filter records extracted from the specified Salesforce object.   |

## **Field Attributes**

The following table describes the attributes in the fields section. It also describes optional attributes that you can provide to override the field metadata. You can override the metadata that the sfdcDigest transformation extracts from a Salesforce object to make the data appear differently in a dataset. For example, Analytics can add a default value to records that have missing values for a field. If you don't override the values, Analytics gets the values from Salesforce.

| Attribute           | Required? | Value   |
|---------------------|-----------|---|
| name                | Yes       | API name of the field in the Salesforce object that you want to include in the dataset. You can specify multiple fields.  |
| defaultValue        | No        | For text and numeric fields that can be null. Default value that replaces a null value for the specified field.   |
| type                | No        | Analytics field type associated with the specified field. Valid types are Text, Numeric, or Date. Any value, including numeric values, can be Text. For example, by default, fiscal quarter from Salesforce objects is Number. However, you can change it to Text. Specify a type to override the type determined by Analytics. |
|                     |           | Example:  |
|                     |           | "type": "Text"  |
|                     |           | Note: You can't change a field's type to Numeric or Date.   |
| fiscal Month Offset | No        | For date fields only. The difference, in months, between the first month of the fiscal year and the first month of the calendar year (January). For example, if the fiscal year starts in January, the offset is 0. If the fiscal year starts in October, the offset is 9.  |
|                     |           | Example:  |
|                     |           | "fiscalMonthOffset": 9  |
|                     |           | Note: This attribute also controls whether Analytics generates fiscal date fields. To generate fiscal date fields, set fiscalMonthOffset to a value other than 0.   |
|                     |           | For more information, see Date Handling in Datasets.  |
| isYearEndFiscalYear | No        | For date fields only. Indicates whether the fiscal year is the year in which the fiscal year ends or begins. Because the fiscal year can start in one calendar year and end in another, you must specify which year to use for the fiscal year.   |
|                     |           | <ul> <li>If true, then the fiscal year is the year in which the fiscal year ends. The default is true.</li> </ul>   |
|                     |           | • If false, then the fiscal year is the year in which the fiscal year begins.   |
|                     |           | Example:  |
|                     |           | "isYearEndFiscalYear": true   |
|                     |           | This field is relevant only when ${\tt fiscalMonthOffset}$ is greater than 0.   |
|                     |           | For more information, see Date Handling in Datasets.  |
| firstDayOfWeek      | No        | For date fields only. The first day of the week for the calendar year and, if applicable, fiscal year. Use 0 to set the first day to be Sunday, 1 to set the  |

| Attribute           | Required? | Value  |
|---------------------|-----------|--|
|                     |           | first day to be Monday, and so on. Use -1 to set the first day to be on January 1. The default is -1.  |
|                     |           | Example:   |
|                     |           | "firstDayOfWeek": 0  |
|                     |           | For more information, see Date Handling in Datasets.   |
| isMultiValue        | No        | For text fields only. Indicates whether the specified field has multiple values.   |
|                     |           | Example:   |
|                     |           | "isMultiValue": false  |
| multiValueSeparator | No        | For text fields only. Character used to separate multiple values in the specified field when isMultiValue equals true. This value defaults to a semicolon (;) if you do not specify a value and isMultiValue equals true. Set to null when isMultiValue equals false.  |
|                     |           | Example:   |
|                     |           | "multiValueSeparator": ";"   |
| precision           | No        | The maximum number of digits in a numeric value, or the length of a text value. For numeric values: Includes all numbers to the left and to the right of the decimal point (but excludes the decimal point character). Value must be between 1 and 18, inclusive. For text values: Value defaults to 255 characters, and must be between 1 and 32,000 characters, inclusive. |
|                     |           | Example:   |
|                     |           | "precision": 10  |
| scale               | No        | The number of digits to the right of the decimal point in a numeric value. Must be less than the precision value. Value must be between 0 and 17 characters, inclusive.  |
|                     |           | Example:   |
|                     |           | "scale": 2   |

## **Filter Conditions Parameters**

The following table describes the structured filter parameters in the filterConditions section. These parameters do not apply to advanced filters.

| Parameter | Required? | Value   |  |
|-----------|-----------|---|--|
| field No  |           | The field in the Salesforce object on which you want to apply a filter condition. Each filter condition in a structured filter uses the following syntax:   |  |
|           |           | <pre>{ "field": "<field name="">", "operator": "<operator>",</operator></field></pre>   |  |
|           |           | "value": " <value>", "isQuoted": true false}</value>  |  |
| operator  | No        | The purpose depends on the context.   |  |
|           |           | <ul> <li>operator can be used as a comparison operator–like =, &lt;, and<br/>IN–that compares the field value against a constant value.</li> </ul>  |  |
|           |           | <ul> <li>operator can also be used as a logical operator (AND, OR, or NOT)<br/>that links multiple filter conditions together.</li> </ul>   |  |
|           |           | In the example below, the bold operator is the logical operator. The other instances of operator are comparison operators.  |  |
|           |           | <pre>"filterConditions": [</pre>  |  |
| value     | No        | The value used in a filter condition.   |  |
| isQuoted  | No        | Indicates whether you quoted the string value in a filter condition.  |  |
|           |           | <pre>Example with quoted values:  "filterConditions": [     {         "field": "StageName",         "operator": "IN",         "value": "('Closed Won', 'Closed Lost')",         "isQuoted": true      } ]</pre> |  |

| Parameter  | Required? | Value   |  |
|------------|-----------|---|--|
|            |           | Example with non-quoted values:   |  |
|            |           | <pre>"filterConditions": [</pre>  |  |
|            |           | If you don't include is Quoted for a filter on a string value, Analytics assumes that the string value is not quoted and adds the quotes for you. |  |
| conditions | No        | Use to specify a logical operator to link multiple filter conditions together.  |  |

SEE ALSO:

sfdcDigest Transformation

Filtering Records Extracted from a Salesforce Object

## sfdcRegister Transformation

The sfdcRegister transformation registers a dataset to make it available for queries. Users cannot view or run queries against unregistered datasets.

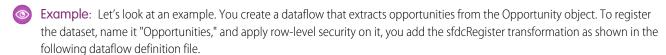


Note: The sfdcRegister transformation overwrites the current version of the dataset if it already exists.

You don't need to register all datasets. For example, you don't need to register an intermediate dataset that is used to build another dataset and does not need to be queried. In addition, you don't need to register datasets that are created when you upload external data because Analytics automatically registers these datasets for you.

Carefully choose which datasets to register because:

- The total number of rows in all registered datasets cannot exceed 100 million rows per platform license, or 250 million per platform license *purchased before* October 20, 2015.
- Users that have access to registered datasets can query their data. Although, you can apply row-level security on a dataset to restrict access to records.



```
"Extract_Opportunities": {
    "action": "sfdcDigest",
    "parameters": {
        "object": "Opportunity",
        "fields": [
            { "name": "Id" },
            { "name": "Name" },
            { "name": "Amount" },
}
```

## IN THIS SECTION:

## sfdcRegister Parameters

When you define an sfdcRegister transformation, you set the action attribute to sfdcRegister and specify the parameters.

## sfdcRegister Parameters

When you define an sfdcRegister transformation, you set the action attribute to sfdcRegister and specify the parameters.

The following table describes the input parameters:

| Parameter | Required? | Value   |
|-----------|-----------|---|
| alias     | Yes       | API name of the registered dataset. This name can contain only underscores and alphanumeric characters, and must be unique among other dataset aliases in your organization. It must begin with a letter, not include spaces, not end with an underscore, and not contain two consecutive underscores. It also cannot exceed 80 characters. |
|           |           | Note: When the alias is unique, the sfdcRegister transformation registers a new dataset with the alias. When an existing dataset has the alias, the transformation overwrites the current version of that dataset.  |
| name      | Yes       | Display name of the registered dataset. The name cannot exceed 80 characters.   |
|           |           | Note: To change the name after you create the dataset, you must edit the dataset.   |
| source    | Yes       | Node in the dataflow definition file that identifies the dataset that you want to register. This node is the input source for this transformation.  |

| Parameter              | Required? | Value  |  |
|------------------------|-----------|--|--|
| rowLevelSharingSource  | No        | The API name of the object from which to inherit sharing. Used when applying row-level security on the dataset when the dataset is first created   |  |
|                        |           | Example: "rowLevelSharingSource": "Opportunity"  |  |
|                        |           | Note: To change the sharing source after you create the dataset, you must edit the dataset. If they don't match, you see a warning that says, "The sharing source and security predicate in this dataset version must be the same as in the dataflow." For more information, refer to Salesforce Sharing Inheritance for Datasets. |  |
| rowLevelSecurityFilter | No        | The predicate used to apply row-level security on the dataset when the dataset is first created.   |  |
|                        |           | Example: "rowLevelSecurityFilter": "'OwnerId' == "\$User.Id""  |  |
|                        |           | Note: To change the predicate after you create the dataset, you must edit the dataset.   |  |
|                        |           | When entering the predicate in the Register transformation of the dataflow JSON, you must escape the double quotes around string values.   |  |
|                        |           | After the dataset is created, Analytics ignores its security predicate setting in the dataflow. To change the security predicate for an existing dataset, edit the dataset in the user interface.  |  |

SEE ALSO:

sfdcRegister Transformation

## sliceDataset Transformation

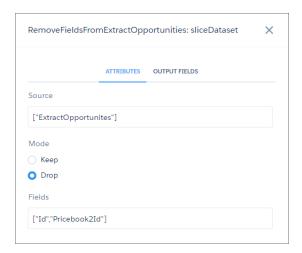
The sliceDataset transformation removes fields from a dataset in your dataflow, leaving you with a subset of fields for use in a new dataset or in other transformations. This allows you to create multiple datasets, each with different sets of fields from a single dataset.

The transformation includes the mode parameter, which lets you choose between two modes: drop or select. Set it to drop to remove the fields you specify. Set it to select to keep the fields you specify.



Example: Here's an example. Let's say your dataflow contains an sfdcDigest node, ExtractOpportunities, that extracts all fields from the Opportunity object. However, some of your users don't want Id fields in their Opportunities dataset. You resolve this by adding a sliceDataset node to your dataflow, specifying the source node, the fields you want to remove from that node, and drop mode.

#### sliceDataset Node in Dataflow Editor



#### sliceDataset Node in Dataflow JSON

#### IN THIS SECTION:

#### sliceDataset Parameters

Add a sliceDataset transformation to a dataflow either in the dataflow editor, or directly in the JSON dataflow definition file. The parameters you specify are the same for both methods.

## sliceDataset Parameters

Add a sliceDataset transformation to a dataflow either in the dataflow editor, or directly in the JSON dataflow definition file. The parameters you specify are the same for both methods.

To add a sliceDataset transformation in the dataflow editor, click

To add a sliceDataset transformation in the JSON definition file, add a node and set the action attribute to sliceDataset.

The following table describes the input parameters:

| Parameter | Required? | Value  |
|-----------|-----------|--|
| source    | Yes       | Node in the dataflow definition file that identifies the dataset that you want to slice. This is the input source for this transformation. |
| mode      | Yes       | The action you want to take on the specified fields. Set it to drop to remove the fields. Set it to select to keep the fields.             |
|           |           | Note: A dataset must have at least 1 dimension field. If a sliceDataset node removes all dimension fields, the dataflow fails.             |

| Parameter | Required? | Value   |
|-----------|-----------|---|
| fields    | Yes       | An array of names of the fields that you want to drop or select from the specified source node. |

## update Transformation

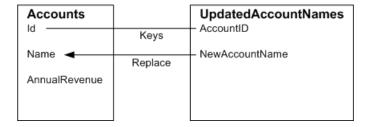
The update transformation updates the specified field values in an existing dataset based on data from another dataset, which we'll call the lookup dataset. The transformation looks up the new values from corresponding fields in the lookup dataset. The transformation stores the results in a new dataset.

When you create the transformation, you specify the keys that are used to match records between the two datasets. To dictate which field in the lookup dataset updates the field in the source dataset, you also map the corresponding fields from both datasets.



**Example:** Let's look at an example. You have an existing Accounts dataset that contains account information—ld, Name, and AnnualRevenue. Unfortunately, some of the account names in the dataset are now incorrect because of a series of mergers and acquisitions. To quickly update the account names in the dataset, you perform the following tasks.

- 1. Create a .csv file that contains the new account names and associated account IDs for accounts that have name changes.
- 2. Upload the .csv file to create a dataset called UpdatedAccountNames.
- **3.** Create a dataflow definition file to update account names in the Accounts dataset by looking up the new account names in the UpdatedAccountNames dataset.



You create the following dataflow definition file.

```
"left": "Extract_AccountDetails",
    "right": "Extract_UpdatedAccountNames",
    "left_key": [ "Id" ],
    "right_key": [ "AccountID" ],
    "update_columns": { "Name": "NewAccountName" }
}

},

"Register_UpdatedAccountRecords": {
    "action": "sfdcRegister",
    "parameters": {
        "alias": "Accounts",
        "name": "Accounts",
        "source": "Update_AccountRecords"
}
}
```

Section 2. Let's look at another example, where a composite key is used to match records between both datasets. In this case, you match records using the account ID and account name fields.

You create the following dataflow definition file.

```
"Extract AccountDetails": {
  "action": "sfdcDigest",
   "parameters": {
      "object": "Account",
      "fields": [
        { "name": "Id" },
         { "name": "Name" },
         { "name": "AnnualRevenue" }
   }
"Extract UpdatedAccountNames": {
  "action": "edgemart",
   "parameters": { "alias": "UpdatedAccountNames" }
},
"Update AccountRecords": {
   "action": "update",
   "parameters": {
      "left": "Extract_AccountDetails",
      "right": "Extract_UpdatedAccountNames",
      "left key": ["Id", "Name"],
      "right key": ["AccountId", "NewAccountName"],
      "update columns": {
         "Name": "NewAccountName",
         "CreatedDate": "NewCreatedDate",
         "AnnualRevenue": "NewAnnualRevenue"
},
"Register UpdatedAccountRecords": {
  "action": "sfdcRegister",
   "parameters": {
```

```
"alias": "Accounts",
    "name": "Accounts",
    "source": "Update_AccountRecords"
}
}
```

## IN THIS SECTION:

## update Parameters

When you define an update transformation, you set the action attribute to update and specify the parameters.

# update Parameters

When you define an update transformation, you set the action attribute to update and specify the parameters.

The following table describes the input parameters.

| Parameter      | Required? | Value   |
|----------------|-----------|---|
| left           | Yes       | Node in the dataflow definition file that identifies the dataset that contains the records that you want to update.   |
| right          | Yes       | Node in the dataflow definition file that identifies the lookup dataset that contains the new values.   |
| left_key       | Yes       | Key column in the left dataset used to match records in the other dataset. If you use a composite key, the left and right keys must have the same number of columns in the same order. For an example, see update Transformation on page 186. |
| right_key      | Yes       | Key column in the right dataset used to match records in the other dataset. If you use a composite key, the left and right keys must have the same number of columns in the same order.   |
| update_columns | No        | An array of corresponding columns between the left and right datasets. Use the following syntax: "update_columns": {     "LeftColumn1":     "RightColumn1",     "LeftColumn2":     "RightColumn2",     "LeftColumnN":     "RightColumnN":     |

| Parameter | Required? | Value   |
|-----------|-----------|---|
|           |           | corresponding left column. The field types of the left and right column must match.   |
|           |           | Note: If you specify a column name that does not exist, the dataflow fails.   |
|           |           | If you do not specify this parameter, the transformation updates the left dataset   |
|           |           | by matching all columns in the right dataset with those in the left. In this case, the right column names must match exactly with the left column names. Otherwise, an error might occur. |

SEE ALSO:

update Transformation

## Overriding Metadata Generated by a Transformation

Optionally, you can override the metadata that is generated by a transformation. You can override object and field attributes. For example, you can change a field name that is extracted from a Salesforce object so that it appears differently in the dataset. To override the metadata, add the overrides to the Schema section of the transformation in the dataflow definition file.

In the Schema section, you can override the metadata attributes for one object only.

The Schema section in this sample sfdcDigest transformation contains metadata overrides:

# **EDITIONS**

Available in: Salesforce Classic and Lightning Experience

Available for an additional cost in: **Enterprise**, **Performance**, and **Unlimited** Editions

```
"Extract Opportunities": {
   "action": "sfdcDigest",
   "parameters": {
      "object": "Opportunity",
      "fields": [
         { "name": "Name" },
         { "name": "Amount" }
   },
   "schema": {
      "objects": [
         {
            "label": "Sales Opportunities",
            "fields": [
               {
                  "name": "Amount",
                  "label": "Opportunity Amount"
               }
```

```
1
;
1
;
```

# Object Attributes

You can override the following object attributes.

| Object Attribute   | Туре   | Description  |
|--------------------|--------|--|
| label              | String | The display name for the object. Can be up to 40 characters.  Example:  "label": "Sales Data"  |
| description String |        | The description of the object. Must be less than 1,000 characters.  Add a description to annotate an object in the dataflow definition file. This description is not visible to users in the Analytics user interface.  Example: |
|                    |        | "description": "The SalesData object tracks basic sales data."   |
| fields             | Array  | The array of fields for this object.   |

## Field Attributes

You can override attributes of each specified dataset field.

| Field Attribute | Туре   | Description   |
|-----------------|--------|---|
| name            | String | Name of the field in the dataset. Identifies the field that you want to override.  Examples:  "name": "Amount"  "name": "Role.Name"   |
| label           | String | The display name for the field. Can be up to 255 characters.  Example:  "label": "Opportunity Amount"   |
| description     | String | The description of the field. Must be less than 1,000 characters.  Add a description to annotate a field in the dataflow definition file. This description is not visible to users in the Analytics user interface.  Example: |

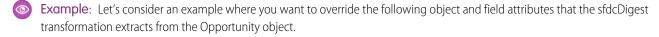
| Field Attribute | Туре    | Description   |
|-----------------|---------|---|
|                 |         | "description": "The Amount field contains the opportunity amount."  |
| isSystemField   | Boolean | Indicates whether this field is a system field to be excluded from query results.  Example:  "isSystemField": false                                   |
| format          | String  | The display format of the numeric value.  Examples:  "format": "\$#,##0.00" (Numeric)  For more information about valid formats, see Numeric Formats. |

## Numeric Formats

An example of a typical numeric value is \$1,000,000.99, which is represented as \$#,##0.00. You are required to specify the precision and scale of the number. The format is specified by using the following symbols:

| Symbol | Meaning  |
|--------|--|
| 0      | One digit. Use to add leading or trailing 0s, like $\#$ , $\#$ # $\#$ . 00 for \$56,375.00.                                      |
| #      | Adds zero or one digit   |
|        | Default symbol used as the decimal separator. Use the decimalSeparator field to set the decimal separator to a different symbol. |
| -      | Minus sign   |
| 1      | Grouping separator   |
| \$     | Currency sign  |





| Object/Field       | Attribute Changes  |  |  |
|--------------------|--|--|--|
| Opportunity object | <ul><li>Change the object label to "Sales Opportunities"</li><li>Add an object description</li></ul> |  |  |
| ld field           | <ul><li>Change the field label to "Opportunity Id"</li><li>Hide the field from queries</li></ul>     |  |  |

| Object/Field    | Attribute Changes  |  |  |
|-----------------|--|--|--|
| Amount field    | <ul><li>Change the field label to "Opportunity Amount"</li><li>Change the format to \$#,##0.00</li></ul> |  |  |
| CloseDate field | Change the field label to "Closing Date"   |  |  |

To override the attributes, you add the Schema section with the override values to sfdcDigest in the dataflow definition file.

```
"Extract_Opportunities": {
   "action": "sfdcDigest",
   "parameters": {
      "object": "Opportunity",
      "fields": [
         { "name": "Id" },
         { "name": "Name" },
        { "name": "Amount" },
         { "name": "StageName" },
         { "name": "CloseDate" },
         { "name": "AccountId" },
         { "name": "OwnerId" }
      1
   },
   "schema": {
      "objects": [
            "label": "Sales Opportunities",
            "description": "These are all sales opportunities.",
            "fields": [
                  "name": "Id",
                  "label": "Opportunity Id",
                  "isSystemField": true
               },
                  "name": "Amount",
                  "label": "Opportunity Amount",
                  "format": "$#,##0.00"
               },
                  "name": "CloseDate",
                  "label": "Closing Date"
            ]
      ]
 "Register Dataset Opportunities": {
   "action": "sfdcRegister",
```

```
"parameters": {
    "source": "Extract_Opportunities",
    "alias": "Opportunities",
    "name": "Opportunities"
    }
}
```

(1) Important: Analytics removes Schema sections from all transformations except sfdcDigest when you add a dataflow to a package. If you intend to package a dataflow, we recommend that you specify field attributes in the transformation itself, instead of in a schema section. For example, this computeRelative transformation uses a label attribute to change a field's label.

```
"CalcAmountAfterdiscount": {
  "action": "computeExpression",
  "parameters": {
    "mergeWithSource": true,
    "source": "getOpps",
    "computedFields": [
        "name": "DiscountedAmount",
        "label": "Discounted Amount",
        "type": "Numeric",
        "saqlExpression": "Amount * Discount Percentage c",
        "precision": 10,
        "scale": 2
      }
    ]
  }
},
```

# **Bring Data into Analytics**

There are two main steps involved in integrating your data: loading and preparing. Loading is the process of bringing data into Analytics from its source, in a form that can be either explored right away or prepared further for later exploration.

The tool you choose to load your data depends on your data source. For example, you can load data from Salesforce objects with a dataflow, or load external data from a web-based data warehouse service with a connector. You can also load external data directly from a .csv file or from Microsoft Excel.

#### IN THIS SECTION:

#### Load Salesforce Data with the Dataset Builder and the Dataflow

Use the dataset builder to create a single dataset based on data from one or more related Salesforce objects. The dataset builder adds transformations to extract, augment, and register the data in a new or existing dataflow. The dataset is created the next time the selected dataflow runs, and refreshes each time the dataflow subsequently runs. You can edit the dataflow to add transformations before you create the dataset.

## Trending Salesforce Data in Analytics

By creating trending Analytics dashboards that track key metrics over time, you can make sense of your growing, ever-changing datasets. Trending data in Analytics helps you discover hidden insights and allows you to share them with colleagues. When you create a trending dashboard based on a Salesforce report, Analytics generates a dataset and a dashboard based on the underlying Salesforce data.

## Connect to Salesforce and External Data with Replication and Connectors

Use replication in Analytics to extract data from its source and load it into intermediate unregistered datasets. These replicated datasets are available for use in dataflows and dataset recipes. Replication has two main benefits. First, it optimizes your dataflows by extracting your Salesforce data in a separate job ahead of time. Second, replication comes with a host of connectors that let you connect to external data and replicate it, ready for use in your dataflows and recipes.

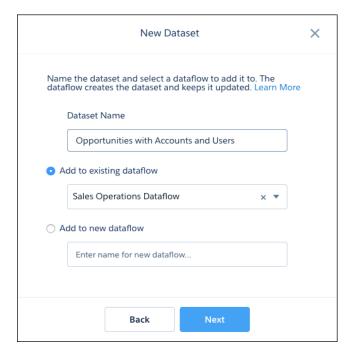
#### Load External Data from CSV and Microsoft® Excel

You can load external data directly into a dataset from a .csv file or from Microsoft Excel. The dataset can be explored right away in a lens, added to a dashboard, or prepared with other data in a dataflow or recipe.

## Load Salesforce Data with the Dataset Builder and the Dataflow

Use the dataset builder to create a single dataset based on data from one or more related Salesforce objects. The dataset builder adds transformations to extract, augment, and register the data in a new or existing dataflow. The dataset is created the next time the selected dataflow runs, and refreshes each time the dataflow subsequently runs. You can edit the dataflow to add transformations before you create the dataset.

- 1. On the home page or on an app page, click **Create** > **Dataset**.
- **2.** Select **Salesforce** as the data source, and then click **Continue**. The New Dataset dialog opens.



**3.** Enter a name for the dataset.

# Available in: Salesforce Classic and Lightning

Classic and Lightning Experience

Available for an additional cost in: **Enterprise**, **Performance**, and **Unlimited** Editions

# **USER PERMISSIONS**

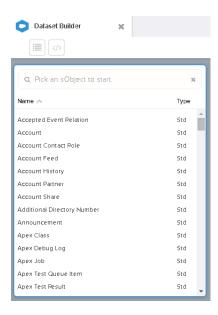
To access the dataset builder:

Edit Analytics Dataflows

- Note: If you enter a dataset name that is already used, when you create the dataset, the dataset builder appends a number to the dataset name. For example, if you entered MyOpportunities, the dataset builder creates MyOpportunities1. The dataset name cannot exceed 80 characters.
- 4. Select a dataflow to add the dataset transformations to. You can select an existing dataflow, or a new dataflow.
  - **a.** To add the transformations to an existing dataflow, select **Add to existing dataflow**, and then select the dataflow from the list.
  - **b.** To add the transformations to a new dataflow, select **Add to new dataflow**, and then enter a name for the new dataflow.
  - Note: The option to add to a new dataflow is only available if you have enabled replication in your org.

#### 5. Click Next.

The dataset builder opens inside the dataflow editor.

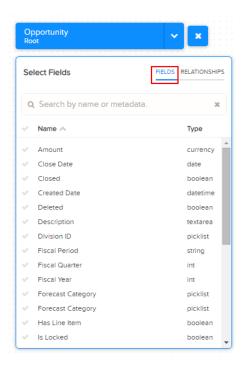


#### **6.** Select the root object.

The root object is the lowest level child object that you can add to the canvas. After you select the root object, you can add only parent objects of the root object—you can't add its child objects. To change the root object, refresh the page and start over.

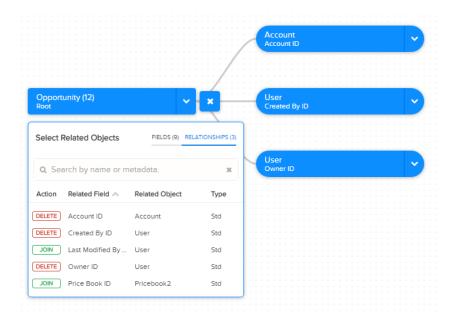
7. Hover over the root object, and then click .

The Select Fields dialog box appears. By default, the Fields tab appears and shows all available object fields from which you can extract data.

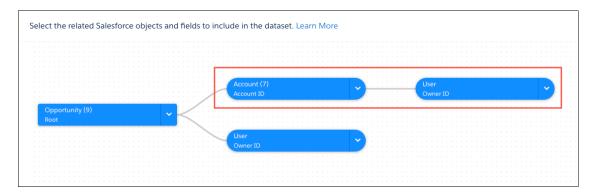


- Note: You can view this dialog box for any object included in the canvas.
- **8.** In the Fields tab, select the fields from which you want to extract data.

  To locate fields more quickly, you can search for them or sort them by name or type.
  - ! Important: Select at least one field for each object that you add to the canvas. If you add an object and don't add any of its fields, the dataflow fails at run time.
- **9.** In the Relationships tab, click **Join** to add the related objects to the canvas. When you add a related object, the related object appears in the canvas.

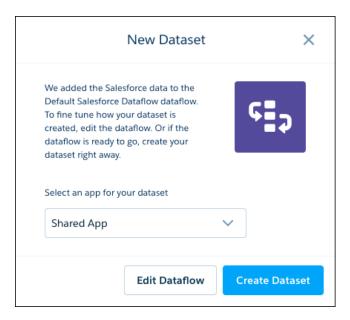


- 10. To remove a related object, click **Delete**.
  - Warning: When you delete a related object, you also delete all objects that descend from the related object. For example, if you delete Account shown below, you delete the branch that contains Account and User.



- 11. For each related object, select the fields from which you want to extract data.
- **12.** To move the entire diagram, select a white space in the canvas and drag it.

  You might need to move the diagram to view a different section of the diagram.
- **13.** When you have finished adding objects and fields, click **Next**. The transformations for the new dataset are added to the dataflow you selected.



- **14.** Select the app that will contain the dataset, if it's not already selected.
- **15.** To open the dataset editor to view or edit the dataflow in that you added the transformations to, click **Edit Dataflow**. To run the dataflow now to create the dataset, click **Create Dataset**.
  - Note: To edit the dataflow, you must select the Shared App for the dataset.

# Trending Salesforce Data in Analytics

By creating trending Analytics dashboards that track key metrics over time, you can make sense of your growing, ever-changing datasets. Trending data in Analytics helps you discover hidden insights and allows you to share them with colleagues. When you create a trending dashboard based on a Salesforce report, Analytics generates a dataset and a dashboard based on the underlying Salesforce data.

Trending refers to data that is displayed over a timeline, allowing trends and patterns to emerge which can be difficult to recognize in a sea of information. If the relevant data is plotted over time, questions on sales cycles, performance, comparisons, seasonality, and more can be answered at a glance. Any data that can be visualized in time, such as opportunities or cases, can be trended. So can geographical data, such as quarterly sales in specific regions. In fact, any regularly updated dataset which has dates associated with it (a date or timestamp attribute for each row) can be trended.

#### IN THIS SECTION:

#### **Trend Salesforce Reports**

To trend data in Analytics, you trend a report that's collecting that data.

#### Stop Trending Salesforce Reports

The number of reports you can trend is limited. To remain under the limit so you can trend other reports, stop trending reports that are no longer needed.

#### Share Trending Dashboards

You can share a trended dashboard just as you can with any Analytics dashboard.

#### Limits and Limitations for Trending Data in Analytics

To prevent the performance of your org from degrading, certain limitations are placed on the size of the snapshots and the number of trended datasets each user can create.

## Trend Salesforce Reports

To trend data in Analytics, you trend a report that's collecting that data.

Watch a Demo: Trend in Analytics

1. Create a dataset.

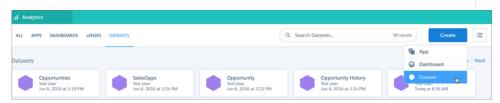


To trend reports in Analytics:

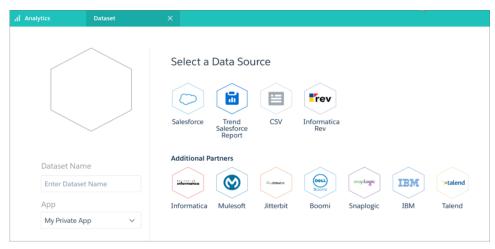
 Use Analytics OR Use Analytics Templated Apps

AND

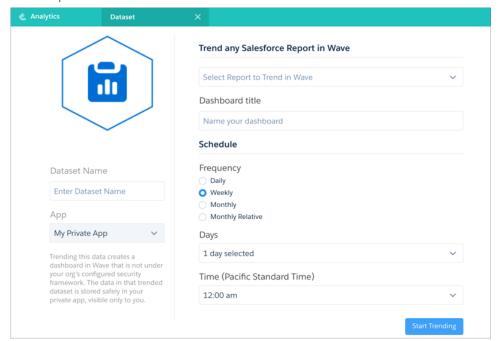
Trend Report Data in Analytics



2. Choose **Trend Salesforce Report** from the available data sources.



**3.** Select a report.



If the report you want to trend does not exist, you must create it first.

- Note: Only the saved version of a report is trended. If you've made unsaved changes to a report, then trend the report, the changes are not reflected in the trending dashboard.
- **4.** Enter a title for the trending dashboard and the new trending dataset.
- **5.** Set a schedule for updating the dashboard. This sets the frequency of how often snapshots of report data are taken.
  - Note:
    - Once you set the schedule, it can't be changed.
    - If you choose a schedule that updates on the 29th, 30th, or 31st of the month, no updates will occur on months that have too few days to meet that schedule.
    - To avoid unwanted behavior during changes to daylight savings, don't choose 2 A.M. as an update time.
- **6.** Choose a different app if you do not want to save the trending dataset in **My Private App**.

If you save the dataset to a shared app, all users who can view that app can view the dataset.

## 7. Click Start Trending.

When the new trending dashboard is ready, you'll receive an email with a link. Once the dashboard is ready, you can also begin to explore the associated dataset, which appears in the Analytics datasets list.

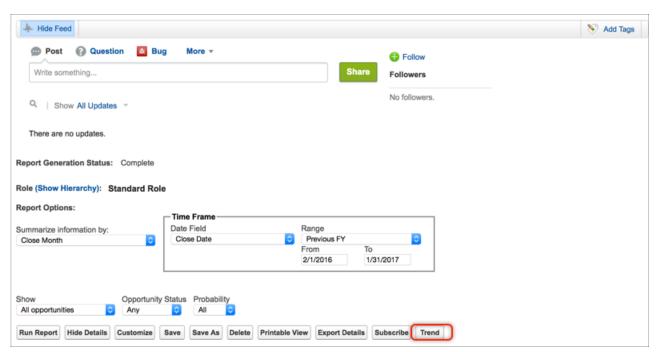
- **8.** Connect to the new trending dashboard using the link in the notification email, or by going to the app in which you saved it (after receiving the notification email).
  - Note: At first, the trending dashboard displays only 1 data point. As snapshots are taken and added to the new Analytics trending dataset underlying the dashboard, more data points are added.

You can also trend any report directly by clicking **Trend** on that report.

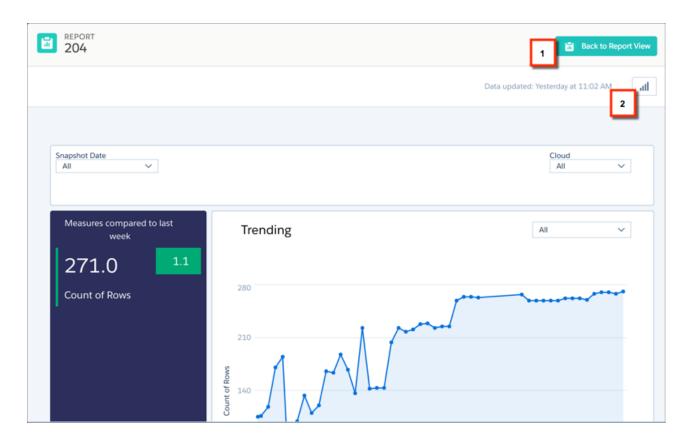
In Lightning Experience:



In classic Salesforce:



Once you start trending, the **Trend** button on the report becomes **View Trend**. If you click that button in Lightning Experience, an embedded dashboard appears.



To return to the report, click **Back to Report View** (1). To view the report in Analytics, click the Analytics button (2).

For best results with trending, follow these guidelines:

- Do not attempt to trend matrix reports. These reports do not have the required structure to be trended.
- Choose reports that have changes on a frequency matching the trending schedule you set up.
- Always clone the source reports into your personal folders. After you start trending, don't edit the reports. Keeping the report unchanged ensures a consistent view. If you plan to share trending dashboards, save them to view-only apps. This keeps the data consistent and prevents anomalies from appearing on the trending Analytics dashboard.
- To get focused, easily observable, and actionable insights, tightly scope source reports. For example, trend only new business deals closing in the current quarter rather than all opportunities. A broad scope makes it more difficult to spot trends.
- Group and summarize your reports in the report builder with key information before you start trending them.
- Do not create joined reports just for trending. Trending dashboards can't be created from joined reports.

# **Stop Trending Salesforce Reports**

The number of reports you can trend is limited. To remain under the limit so you can trend other reports, stop trending reports that are no longer needed.

To stop trending from Analytics, open the trending dataset by choosing to edit it, then click **Stop Trending**.

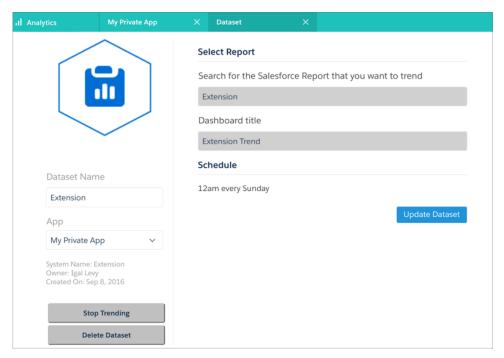
# USER PERMISSIONS

To trend reports in Analytics:

 Use Analytics OR Use Analytics Templated Apps

AND

Trend Report Data in Analytics



To stop trending from Lightning Experience, go to the trending report and open the menu next to **View Trend** and choose **Stop Trending**.



To stop trending from classic Salesforce, go to the trending report and click **View Trend** on the report to open a dialog, then click **Stop Trending**.



**Note:** If you stop trending, you cannot restart where the trending left off (there is no pause button). Trending the same report again creates a new dataset and a new trending dashboard.

## **Share Trending Dashboards**

You can share a trended dashboard just as you can with any Analytics dashboard.

You can share a trending dashboard just as you share any dashboard. You can post an image of it to a feed, or download and share an image. You can also embed your trending Analytics dashboard as you would any other dashboard.

To share the dashboard directly using its URL, first share the trending dashboard's underlying snapshots dataset by saving it to an Analytics app that your target audience can access.

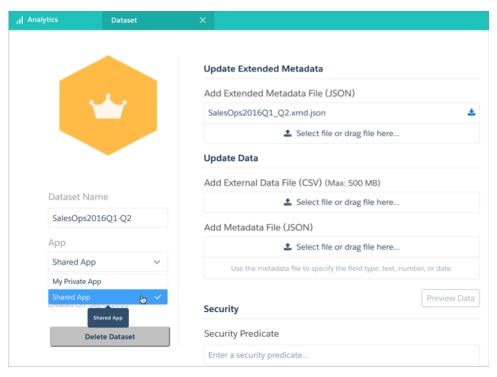
# **USER PERMISSIONS**

To trend reports in Analytics:

 Use Analytics OR Use Analytics Templated Apps

AND

Trend Report Data in Analytics



(1) Important: Sharing the trending Analytics dashboard or the underlying dataset could expose data to users who normally would not have access to that data.

It is possible to share trending Analytics dashboards with users who would normally be prevented from seeing data based on security settings. If you save a trending dashboard to any app that is not My Private App, then anyone with access to that app (and the underlying dataset) can view all data in that Analytics dashboard regardless of any sharing restrictions or field-level security that has been set

## Limits and Limitations for Trending Data in Analytics

To prevent the performance of your org from degrading, certain limitations are placed on the size of the snapshots and the number of trended datasets each user can create.

- Maximum number of trended datasets per user: 5
- Maximum number of rows per snapshot: 100,000
- Max total number of rows in a trended dataset: 5000000
- Maximum monthly number of rows for all snapshots per org: 40 million
- Trended datasets count towards the overall Analytics platform limits, including total number of rows

To control the impact that trending datasets have on general org-wide limits, configure these limits, available on the Analytics Settings page:

- **Max number of rows per snapshot** is an option to control the maximum number of rows that a trended report can have when a snapshot is taken. If the report exceeds the limit, the snapshot is not taken and an error email is sent to the user.
- **Max total number of rows in a trended dataset** is an option to limit the maximum number of rows that the Analytics dataset containing the snapshots can have. If the dataset exceeds the limit, the oldest snapshot is deleted from the dataset.
- **Enable automatic deletion of inactive datasets** is an option that is on by default. Trending dashboards that aren't being updated or accessed for the number of days configured in **Number of days to keep inactive datasets** are deleted. The default number of

days a trending dashboard can remain inactive is 100. The dashboard owner receives an email warning a week before deletion. When the dashboard and dataset are deleted, the owner receives an email confirmation.

Only the user who starts trending the report can stop trending it. The user can share the trending dashboard with other users. If aother user wants to trend the same report, the user must create a new trend, which will affect other trends for the report.

Once trending begins, do not change access rights to the underlying report or add or delete dimensions and measures. Changing the report or the access rights can cause an error or inaccuracies at the time a snapshot is taken.

Snapshots are taken every Sunday at midnight (local time), unless you set a different schedule when trending a report. Processing and surfacing the data requires more time, which can delay snapshots.

You cannot customize the XMD of trending datasets. Customize Actions functionality will not be available for trended datasets.

If trending is stopped and then restarted, a new snapshot dataset is created, with a new trending dashboard. The previously trended dataset is not included in the new dashboard. Data can be moved into the new dataset using the Salesforce data APIs.

The dashboard designer is enabled by default for most orgs. Make sure that it remains enabled for your org. To render, trending dashboards rely on the dashboard designer being enabled.

Users whose profiles have View Encrypted Data enabled can't create trended datasets because Analytics does not support encrypted data.

Roll out the capability gradually to your user base and observe data usage and performance. Stop trending datasets that are no longer needed for active use and delete the underlying trended datasets to recover storage limits.

Some situations can prevent a report that is trended in Analytics from successfully capturing the data for a particular run. These situations include, but are not limited to: jobs involving the User object, site switching, and instance maintenance. If a trended report attempts to run under these conditions, it fails and the dataset does not have records added for that run. You cannot reschedule or run a trending job again; however, future runs that are not subject to these conditions process as normal.

You can use the **Update Dataset** button to move the dataset from a private to a public folder, as datasets are created in their own private folders.

The best candidates for trending are reports that can be visualized in time and have some frequently changing values. Examples: open opportunities pipeline or escalated cases.

The dataflow that creates a trended dataset is auto generated and cannot be viewed or modified. This restriction is required because the underlying trending logic can be sensitive to changes in the dataflow.

If you modify a field in a report that is trended, the change is reflected in the associated dashboard from the time of the change onward. If you change other aspects of the report, such as filters, those changes are not reflected in the associated dashboards.

If you modify the dashboard for a trended report, the changes are reflected in the next trend update.

Boolean fields in a trended report are treated both as a measure (for calculations) and a dimension (for sorting).

## Connect to Salesforce and External Data with Replication and Connectors

Use replication in Analytics to extract data from its source and load it into intermediate unregistered datasets. These replicated datasets are available for use in dataflows and dataset recipes. Replication has two main benefits. First, it optimizes your dataflows by extracting your Salesforce data in a separate job ahead of time. Second, replication comes with a host of connectors that let you connect to external data and replicate it, ready for use in your dataflows and recipes.

#### IN THIS SECTION:

#### Optimize Your Dataflows with Replication

Replication decouples the extract of Salesforce data from your dataflows, letting you run it on a separate schedule. By scheduling these extracts ahead of time, your dataflow has less to do and runs faster. To lighten the load even more, replication extracts Salesforce data incrementally by default, meaning that only data that's changed gets extracted.

#### Replicate Local and External Data with Analytics Connectors

Analytics connectors give you an easy way to connect to data inside and outside of your Salesforce org, and bring it into Analytics.

## Optimize Your Dataflows with Replication

Replication decouples the extract of Salesforce data from your dataflows, letting you run it on a separate schedule. By scheduling these extracts ahead of time, your dataflow has less to do and runs faster. To lighten the load even more, replication extracts Salesforce data incrementally by default, meaning that only data that's changed gets extracted.

Without replication, a dataflow performs a separate extract each time it needs data from a Salesforce object. Let's take a look at an example. Imagine your organization has three dataflows, extracting data from Salesforce objects as follows:

|                                      | Accounts | Contacts   | Opportunities | Campaigns | Leads           | Cases | Users |
|--------------------------------------|----------|------------|---------------|-----------|-----------------|-------|-------|
| Default<br>Dataflow                  |          | <b>E</b> = | <u>"</u>      |           |                 |       | 8     |
| Sales Analytics<br>App Dataflow      |          | <b>E</b>   | <u> </u>      |           | $ \dot{\star} $ |       |       |
| Service<br>Analytics App<br>Dataflow |          | <b>E</b>   |               |           |                 |       | 8     |

Every time these dataflows run, they have to extract all this Salesforce data. And the more data there is, the longer the dataflow takes to run. What's more, the dataflows are duplicating effort by performing separate extracts from the same object. For example, Accounts data is extracted by all three dataflows.

With replication, all of these extracts are performed as a separate process, which you can schedule to take place before your dataflows run.

|             | Accounts | Contacts | Opportunities | Campaigns | Leads           | Cases | Users |
|-------------|----------|----------|---------------|-----------|-----------------|-------|-------|
| Replication |          | <b>E</b> | <u> </u>      |           | $ \dot{\star} $ |       | 8     |

This replicated data is then available to all your dataflows, which run faster because they no longer have to extract any data—just load and transform.

#### IN THIS SECTION:

#### Understand What Happens When You Enable Replication

When you enable replication, Analytics looks at the sfdcDigest nodes in your existing **scheduled** dataflows to see which Salesforce objects and fields you're currently extracting. Using this information, Analytics enables replication for each of these objects to extract the data separately. Understanding exactly what happens when you enable replication helps you identify any additional actions that you might need to take to ensure replication runs successfully.

#### **Enable Replication**

Enable replication to decouple the extract of Salesforce data from your dataflows.

#### Schedule, Run, and Monitor Replication

You can schedule replication to run automatically, or run it manually, and monitor its progress, all in the data manager.

## Extract Data Incrementally in Replication

By default, replication extracts data from each Salesforce object incrementally. Records are inserted, updated, or deleted to match changes in the object since the previous replication run. Because only changes are extracted, replication runs faster.

## **Configure Replication Settings**

When a Salesforce object is enabled for replication, you can configure its replication settings to enable or disable fields for replication, add a filter to only replicate specific data, or disable replication for an object. You do all this through the data manager.

#### Delete Replication for an Object

Delete replication for an object in the data manager to exclude it from replication.

#### Add Objects and Fields to Replication

To add an object, add an sfdcDigest node for it to one of your dataflows. To add a field for an object, add it to an existing sfdcDigest node for the object in one of your dataflows. The new object or field is added automatically to replication when you upload the updated dataflow definition file. Alternatively, use the Salesforce Local connection.

## Considerations When Creating or Updating Dataflows with Replication Enabled

If you have enabled replication, here are some things to keep in mind the next time you create or update one of your dataflows.

#### Considerations When Using Wizard-Based Analytics Apps with Replication

If you use wizard-based Analytics Analytics apps, such as Sales or Service Analytics, here are some things to consider before and after you enable replication.

#### Replication Limits and Limitations

Here are some things to consider when you're working with replication.

## Understand What Happens When You Enable Replication

When you enable replication, Analytics looks at the sfdcDigest nodes in your existing **scheduled** dataflows to see which Salesforce objects and fields you're currently extracting. Using this information, Analytics enables replication for each of these objects to extract the data separately. Understanding exactly what happens when you enable replication helps you identify any additional actions that you might need to take to ensure replication runs successfully.

Here's what happens, and the action we recommend that you take.

## **Your Existing Dataflows Are Validated**

Because replication is based on your existing dataflows, Analytics validates your scheduled dataflows to ensure that they are error free. Although dataflows with errors are not considered for replication, Analytics alerts you to any errors in sfdcDigest nodes when you enable replication.

#### **Recommended Action**

Before you enable replication, review you scheduled dataflows for errors. In particular, look out for incorrect object or field names in sfdcDigest nodes. If you see errors displayed when you enable replication, fix them in your dataflows before you continue. When you fix errors in a dataflow, Analytics automatically considers it for replication when you upload the dataflow definition file.



(1) Important: Analytics does not consider unscheduled dataflows when you enable replication. Make sure that any dataflow that you want to be considered is scheduled. See Schedule a Dataflow.

#### Your Dataflows Are Processed in Order of Dataflow Creation Date

Analytics considers the sfdcDigest nodes in your dataflows in the order in which they were created. If there are multiple sfdcDigest nodes for the same object in your dataflows, they are merged. If there are conflicts with object-level parameters, the values from the most recently created dataflow are used for replication. Consider the following example dataflows, each containing an sfdcDigest node for the Opportunity object:

```
Dataflow A (Created 08/01/2016)
                                                Dataflow B (Created 08/15/2016)
{
  "Extract OpportunitiesA": {
                                                  "Extract OpportunitiesB": {
     "action": "sfdcDigest",
                                                     "action": "sfdcDigest",
     "parameters": {
                                                     "parameters": {
         "object": "Opportunity",
                                                         "object": "Opportunity",
         "incremental": false,
                                                         "incremental": true,
         "fields": [
                                                         "fields": [
            { "name": "Id" },
                                                            { "name": "Id" },
            { "name": "Name" },
                                                            { "name": "Name" },
            { "name": "StageName" },
                                                            { "name": "StageName" },
            { "name": "CloseDate" },
                                                            { "name": "CloseDate" },
            { "name": "AccountId" },
                                                            { "name": "AccountId" },
            { "name": "OwnerId" }
                                                            { "name": "OwnerId" }
         1
                                                         1
     }
                                                     }
  }
                                                  }
```

In the resulting replication for this object, the incremental parameter is set to true, from the most recently created dataset. This also applies to other object-level attributes, such as fullRefreshToken and enablePKChunking.

#### **Recommended Action**

Review your dataflows to ensure that object-level parameters are consistent across all sfdcDigest nodes for the same object.

#### All Fields in Multiple sfdcDigest Nodes for an Object Are Included in Replication

If your dataflows have multiple sfdcDigest nodes for the same object, each with a different set of fields, a superset of all these fields is included in replication. In addition, if the same field has different attributes, such as type or isMultivalue, the attributes from the most recently created dataflow are used for replication. Consider the following example dataflows, each containing an sfdcDigest node for the Opportunity object:

#### Dataflow A (Created 08/01/2016) Dataflow B (Created 08/15/2016) "Extract OpportunitiesA": { "Extract OpportunitiesA": { "action": "sfdcDigest", "action": "sfdcDigest", "parameters": { "parameters": { "object": "Opportunity", "object": "Opportunity", "fields": [ "fields": [ { "name": "Id"}, { "name": "Id"}, { "name": "Name" }, { "name": "Name" }, { "name": "StageName" }, { "name": "StageName" }, { "name": "CloseDate", { "name": "CloseDate", "fiscalMonthOffset": 9 }, "fiscalMonthOffset": 3 } { "name": "AccountId" }, 1 { "name": "OwnerId" } } ] } }

In the resulting replication for this object, the Id, Name, StageName, CloseDate, AccountId, and OwnerId are included. The fiscalMonthOffset attribute for CloseDate is set to 3 from the most recently created dataflow.

#### **Recommended Action**

Review the fields in the sfdcDigest nodes of your dataflows. If the resulting replication includes fields that you don't require, you can disable them in the replication settings for that object (see Configure Replication Settings). If you have field attribute conflicts, ensure that the attributes you want to use for replication are in the most recently created dataflow.

## Advanced Filters on sfdcDigest Nodes Are Included in Replication

If an sfdcDigest node includes a complexFilterConditions parameter to apply an advanced filter, Analytics adds this filter to the replication settings for that object. When there are multiple sfdcDigest nodes with complex filters for the same object, only the filter from the most recently created or updated dataflow is added to the replication settings. Analytics ignores structured filters applied through filterConditions parameters.

#### **Recommended Action**

After you enable replication, review each object's replication settings to verify that filters have been applied correctly (see Configure Replication Settings). To use multiple filters for an object, we recommend that you remove any filter from replication settings, and add the filters to the corresponding dataflow using the filter transformation (see filter Transformation).



**Note**: If you have participated in the replication pilot program and have sfdcDigest node filters in your replication dataflow, these filters are not added to replication. Add these filters manually through the object's replication settings. See Configure Replication Settings.

#### SEE ALSO:

Configure the Dataflow Through the Definition File sfdcDigest Transformation
Filtering Records Extracted from a Salesforce Object

## **Enable Replication**

Enable replication to decouple the extract of Salesforce data from your dataflows.

(1) Important: We recommend that you read Understand What Happens When You Enable Replication before you enable replication. This will help you identify any additional actions that you might need to take to ensure replication runs successfully.

To enable replication, perform the following steps.

- 1. From Setup, enter Analytics in the Quick Find box, then select **Settings**.
- 2. Select Enable Replication, and then click Save.
- (1) Important: After you enable replication, make sure that you run replication before your dataflows next run. Dataflows with sfdcDigest nodes fail until replication has run and completed for the first time. See Schedule, Run, and Monitor Replication.

Schedule, Run, and Monitor Replication

You can schedule replication to run automatically, or run it manually, and monitor its progress, all in the data manager.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

## **USER PERMISSIONS**

To enable replication:

Customize Application

(1) Important: After you enable replication, make sure you run replication and it completes before your dataflows next run. Dataflows with sfdcDigest nodes fail until replication has run for the first time.

#### IN THIS SECTION:

#### Schedule Replication

Schedule replication to run automatically.

## Run Replication

Run replication manually at any time in the data manager.

#### **Monitor Replication**

Monitor the progress of replication in the data manager.

#### **Schedule Replication**

Schedule replication to run automatically.

When you schedule replication, you schedule it for each of your connections separately. You can't schedule each object separately.

Note: A replication run doesn't count towards your daily dataflow run limit.

To schedule replication, perform the following steps.

- 1. In Analytics, click the gear icon ( and then click **Data Manager** to open the data manager.
- **2.** In the data manager, click the Setup tab.

  The Setup tab displays a list of objects enabled for replication, grouped by connection.
- 3. On the right of the connection that you want to schedule, click , and select **Schedule**. The schedule dialog appears.
- **4.** Make selections to schedule replication.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# USER PERMISSIONS

To schedule replication:

Edit Analytics Dataflows

The schedule options for replication are the same as for dataflows. See Schedule a Dataflow for more about these options.

5. Click Save.

Schedule information for the connection is displayed in the connection header.

#### **Run Replication**

Run replication manually at any time in the data manager.



Note: A replication run doesn't count towards your daily dataflow run limit.

To run replication, perform the following steps.

- 1. In Analytics, click the gear icon ( ) and then click **Data Manager** to open the data manager.
- 2. In the data manager, click the **Setup** tab.

  The Setup tab displays a list of objects enabled for replication, grouped by connection.
- **3.** To run replication, perform one of these steps.
  - a. To run replication for all objects in a connection, on the right of the connection, click and select **Run Now**.
    - The connection is queued to run.
  - **b.** To run replication for a single object, on the right of the object, click and select **Run Replication**.

If you're running replication for an object in the local Salesforce connection, select either an incremental or a full extract when you're prompted.

The Monitor tab of the data manager opens to display the replication as a separate job.

## **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

## **USER PERMISSIONS**

To run replication:

Edit Analytics Dataflows

## **Monitor Replication**

Monitor the progress of replication in the data manager.

To monitor replication, perform the following steps.

- 1. In Analytics, click the gear icon ( ) and then click **Data Manager** to open the data manager.
- In the data manager, click the Monitor tab.
   The Jobs subtab displays information about your replication jobs.

Extract Data Incrementally in Replication

By default, replication extracts data from each Salesforce object incrementally. Records are inserted, updated, or deleted to match changes in the object since the previous replication run. Because only changes are extracted, replication runs faster.

Ø

Note: A full extract is performed the first time replication runs for an object.

You can run a full extract for an object by updating the dataflow, or by selecting a full extract when you run replication for the object.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

## **USER PERMISSIONS**

To monitor replication:

Edit Analytics Dataflows

## Run a Full Extract by Updating the Dataflow

To turn off incremental mode for a replicated object, add the incremental parameter to the object's sfdcDigest node in your dataflow, and set its value to false. For example:

```
"Extract_Opportunities": {
    "action": "sfdcDigest",
    "parameters": {
        "object": "Opportunity",
        "incremental": false,
        "fields": [
            { "name": "Id" },
            { "name": "Name" },
            { "name": "StageName" },
            { "name": "CloseDate" },
            { "name": "AccountId" },
            { "name": "OwnerId" }
            ]
        }
}
```

To force a one-time full extract for a replicated object, add the fullRefreshToken parameter to the object's sfdcDigest node, and give it a random value. For example:

```
"Extract_Opportunities": {
    "action": "sfdcDigest",
    "parameters": {
        "object": "Opportunity",
        "fullRefreshToken": "bb",
        "fields": [
            { "name": "Id" },
            { "name": "Name" },
            { "name": "StageName" },
            { "name": "CloseDate" },
            { "name": "AccountId" },
            { "name": "OwnerId" }
            ]
        }
}
```

The next time you need to force a full extract for this object, change the value in the fullRefreshToken parameter.

## Run a Full Extract When You Run Replication for an Object

To run a full extract for a replicated Salesforce object, follow these steps.

- 1. In Analytics, click the gear icon ( ) and then click **Data Manager** to open the data manager.
- 2. In the data manager, click the **Setup** tab.

The Setup tab displays a list of objects enabled for replication.

- **3.** On the right of the replication you want to run, click and select **Run Replication**.
- 4. Click Run with full extract.

The Monitor tab of the data manager opens to display the replication as a separate job.

#### **Considerations When Using Incremental Extract with Replication**

- If incremental mode is explicitly turned off in an sfdcDigest node, and not explicitly turned on in later nodes for the same object, it is not turned on when you enable replication. You have to manually turn it on by setting the incremental parameter to true in the dataflow.
- When you enable replication, incremental mode is not turned on for Salesforce objects that perform hard deletes on records, unless it's explicitly turned on in the dataflow.
  - (1) Important: To comply with regulatory requirements, we recommend that you don't explicitly turn on incremental extraction. When incremental extraction is on, records deleted from an object that performs hard deletes aren't deleted from Analytics datasets until the next full extract is run.
- As a best practice, force a full refresh regularly, using the fullRefreshToken parameter, to ensure that all changes are picked up.
- Incremental extract isn't supported for Salesforce big objects.
- Formula fields can become out of sync with your replicated object in incremental mode. We recommend that you turn off incremental extracts for objects containing formula fields.
- If you make field changes in an sfdcDigest dataflow node, such as adding or removing fields, or changing attributes, Analytics triggers a full extract of data the next time replication runs.

#### SEE ALSO:

Configure the Dataflow Through the Definition File sfdcDigest Transformation

#### Configure Replication Settings

When a Salesforce object is enabled for replication, you can configure its replication settings to enable or disable fields for replication, add a filter to only replicate specific data, or disable replication for an object. You do all this through the data manager.

To configure replication settings, perform the following steps.

- 1. In Analytics, click the gear icon ( ) and then click **Data Manager** to open the data manager.
- 2. In the data manager, click the Setup tab.

  The Setup tab displays a list of objects enabled for replication. Salesforce objects from your local org are listed first.
- **3.** To open an object's replication settings, click the object.

  The field picker appears. Fields already enabled for replication are selected.

# **EDITIONS**

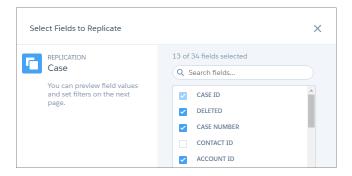
Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

## **USER PERMISSIONS**

To configure replication settings:

Edit Analytics Dataflows

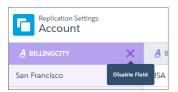


- **4.** Select fields that you want to enable, or deselect them to disable.
  - Note: Consider the following when changing the fields enabled for replication.
    - You can't disable replication for a field that's used in a dataflow, or disable replication for an object's ld field.
    - New fields that you enable here are replicated separately from the dataflow, through the Salesforce Local connection.
    - If a replication-enabled custom field is deleted in your org, replication flows for that object fail. Deselect deleted fields here to ensure replication runs successfully.

#### 5. Click Continue.

The Preview Source Data page opens, showing a preview of the data in the selected fields.

6. You can disable replication for a field here too. Hover over the field's column header and click the cross that appears.



- 7. To filter the data that's replicated, click .
  - **a.** Enter a filter using a Salesforce Object Query Language (SOQL) WHERE clause expression. For example:

```
RecordType = 'B2B' AND Status = 'Open'
```

- b. Click Done.
  - Note: Your preview data does not reflect any filter you add. Filters are only applied when you save the replication settings.
- 8. To view a field's attributes, click the field's column header, and then click .

  The field attributes appear in a panel on the right. Here you can review the field's API name and type, and settings such as default value and precision.
  - Note: Field attributes for local replications are read only.
- **9.** To save the replication settings, click **Save**.

Delete Replication for an Object

Delete replication for an object in the data manager to exclude it from replication.



Note: You can't delete replication for an object that's used in a dataflow or recipe.

To delete replication for an object, perform the following steps.

- 1. In Analytics, click the gear icon ( ) and then click **Data Manager** to open the data manager.
- **2.** In the data manager, click the Setup tab. The Setup tab displays a list of objects enabled for replication.
- Click the actions button ( ) to the right of the object and then select **Delete Replication**.
   A warning message appears.
- **4.** Read the warning message carefully and then click **Delete**.



**Note:** You can re-enable an object by adding an sfdcDigest node for it to your dataflow, or by using the Salesforce Local connection.

## Add Objects and Fields to Replication

To add an object, add an sfdcDigest node for it to one of your dataflows. To add a field for an object, add it to an existing sfdcDigest node for the object in one of your dataflows. The new object or field is added automatically to replication when you upload the updated dataflow definition file. Alternatively, use the Salesforce Local connection.

#### SEE ALSO:

Configure the Dataflow Through the Definition File sfdcDigest Transformation

Considerations When Creating or Updating Dataflows with Replication Enabled

If you have enabled replication, here are some things to keep in mind the next time you create or update one of your dataflows.

- Analytics validates the dataflow definition file when you upload it. If you see errors displayed, correct them and upload the file again.
- Dataflow definition file uploads might take longer. This is because Analytics is validating the file and using the sfdcDigest nodes to define replication settings.
- If you remove an object's sfdcDigest node from the definition file, replication is not disabled for that object. If necessary, disable replication for an object on the Setup tab of the data manager. See Delete Replication for an Object.
- If you remove a field from an sfdcDigest node in the definition file, replication is not disabled for that field. If necessary, disable replication for the field in replication settings. See Configure Replication Settings.
- If you add a field in the definition file, that field is enabled in the replication settings.
- If you unschedule the dataflow, Analytics does not disable replication for the objects and fields.

Considerations When Using Wizard-Based Analytics Apps with Replication

If you use wizard-based Analytics Analytics apps, such as Sales or Service Analytics, here are some things to consider before and after you enable replication.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# USER PERMISSIONS

To delete replication for an object:

Edit Analytics Dataflows

### **Enabling Replication When You Are Already Using Analytics Apps**

If you already have Analytics apps when you enable replication, it's important that replication includes all the Salesforce objects and fields used in these apps. If it doesn't, the affected Analytics app dataflows fail. Complete these steps to ensure all the required objects and fields are included.

- 1. Before you enable replication, set a recurring schedule on each of your Analytics app dataflows. Analytics considers objects and fields in only scheduled dataflows when you first enable replication.
- **2.** After you enable replication, check replication settings to verify that all the required objects and fields have been included. See Configure Replication Settings.
- 3. Run replication to ensure that all objects and fields in the Analytics app dataflows have been replicated.
- **4.** Run your Analytics app dataflows to verify that they run to completion.
- **5.** Schedule replication to run before all your dataflows, to keep your Analytics app data up to date.

#### Creating a New Wizard-Based Analytics App After Enabling Replication

When you create a wizard-based Analytics app, objects and fields from the new dataflow are automatically added to replication, if they're not already included. Complete these steps after you create an Analytics app.

- 1. Check replication settings to verify that all the required objects and fields have been included. See Configure Replication Settings.
- 2. Run replication to ensure that all objects in the new dataflow have been replicated.
- 3. Run the new Analytics app dataflow.
- **4.** Schedule the new Analytics app dataflow to run after replication.

### **Replication Limits and Limitations**

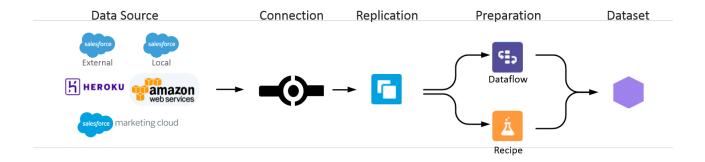
Here are some things to consider when you're working with replication.

- You can enable up to 100 objects for replication. If you are currently extracting more than 100 objects in your dataflows, contact Salesforce Customer Support before you enable replication
- Replication only performs one extract per object. Keep this in mind if you need to perform multiple extracts from the same object. For example, if you need to extract both filtered and unfiltered data from an object.

#### Replicate Local and External Data with Analytics Connectors

Analytics connectors give you an easy way to connect to data inside and outside of your Salesforce org, and bring it into Analytics.

Use a connector to create a connection to a data source, such as another Salesforce org or an Amazon Redshift data warehouse. Then use that connection to replicate all the objects that you need from the source. You can then prepare the data in these replications, using a dataset recipe or a dataflow, to create your final dataset.



Analytics provides an internal Salesforce connector for data in your local org, and a range of remote connectors for data in apps, data warehouses, and database services. Let's look at these connectors and how an example company, Blue Sky Solar, uses some of them. Blue Sky Solar sells and installs solar panels in California and Arizona.

#### Salesforce Local Connector

The Salesforce Local Connector is the default connector. If you're currently using replication for objects in your local Salesforce org, you are already using this connector. Blue Sky Solar already uses replication to bring its local California sales data into Analytics. The company uses the Salesforce Local connector to replicate additional objects without having to add them to the dataflow.

#### **Enterprise Application Connectors**

Use these connectors to connect to your data in external applications.

- Salesforce External
- Salesforce Marketing Cloud Contacts
- Microsoft Dynamics CRM

Blue Sky Solar uses all three of these connectors.

#### **Salesforce External Connector**

The Salesforce external connector lets you replicate data from other Salesforce orgs. To qualify for state issued grants, Blue Sky Solar operates as separate entities in Arizona and California. Each entity operates its own Salesforce org. Senior leadership wants to understand the state of the business across both entities. The company uses the Salesforce external connector to connect the California org Analytics instance to the Arizona org opportunity data. This data is then merged with the California Salesforce org opportunity data in Analytics to create a unified view of the opportunity pipeline.

# **Salesforce Marketing Cloud Contacts Connector**

Blue Sky Solar tracks prospects in Marketing Cloud. The company plans to enter the Southern California market and wants to launch a personalized marketing campaign. The Analytics Marketing Cloud Contacts connector allows the marketing team to load prospect data from previous campaigns into Analytics and use Analytics dashboards to target select companies and households.

#### **Microsoft Dynamics CRM Connector**

Before migrating to Salesforce, Blue Sky Solar used Microsoft Dynamics 365 as its CRM solution. Not all data was made available in the Salesforce system, but it's not lost thanks to the Microsoft Dynamics CRM connector. The company can now replicate this data in Analytics and make it available for use in lenses and dashboards.

#### Data Warehouse Connectors

Use these connectors to connect to your data in external data warehouse services.

Amazon Redshift

- Google BigQuery
- Microsoft Azure SQL Data Warehouse
- Snowflake Computing

Blue Sky Solar uses data warehouse connectors to capture data in these scenarios.

#### **Amazon Redshift Connector**

Each installed solar system constantly monitors the generated electricity. Blue Sky Solar has a Salesforce Community page that provides an account overview for each customer, using Analytics-driven widgets to show the generated electricity. The raw data is initially stored in Amazon Redshift and aggregated on the Amazon platform. The data is then brought into Analytics using the Amazon Redshift connector.

## **Google BigQuery Connector**

Hundreds of thousands of people visit the company's website every year. Using Google Analytics, the marketing team tracks online engagement and optimizes their website content daily. This data is made available in Google BigQuery and aggregated to provide key indicators for each visitor. The company can now replicate this data in Analytics and analyze it in lenses and dashboards.

#### **Snowflake Computing Connector**

The Blue Sky Solar purchasing department has full visibility into the sales team's opportunity pipeline. This helps them estimate demand for solar panel products in the various geographies. By bringing in product inventory data from their Snowflake data warehouse, the department has a complete view to combine the future demand prediction from the sales pipeline with current inventory data. By putting these two data points together in a single analytics solution, Blue Sky Solar can avoid inventory shortages and keep operations humming at full speed.

#### **Database Services Connectors**

Use these connectors to connect to your data in external database services.

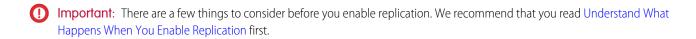
- AWS RDS Aurora MySQL
- AWS RDS Aurora PostgresSQL
- AWS RDS MariaDB
- AWS RDS MySQL
- AWS RDS Oracle
- AWS RDS PostgreSQL
- AWS RDS SQL Server
- Heroku Postgres
- Microsoft Azure SQL Database
- SAP HANA

Blue Sky Solar, uses the Heroku Postgres connector. Prospect customers interested in installing a solar system can download the Blue Sky Solar mobile app. The app helps the prospect identify suitable rooftop spaces for a solar system. This data is stored in a Heroku Postgres database, and the marketing team uses it for targeted campaigns. The Analytics Heroku Postgres connector lets the team copy this data into Analytics for analysis.



Note: Remote connectors perform a full extract of data every time that replication runs. Incremental extracts and filters aren't available.

Analytics connectors are enabled when you enable replication. If you haven't enabled replication, you can do it from Setup. Enter Analytics in the Quick Find box, then click **Settings**. Select **Enable Replication**, and then click **Save**.



#### IN THIS SECTION:

#### Create a Remote Connection

Create a remote connection to replicate external data.

#### Enable Replication for an Object with a Connection

Use a connection to enable replication for objects in the connected data source.

#### Prepare Replicated Data in Dataflows and Recipes

After replication has run, you can prepare replicated data in dataflows and recipes.

#### Connectors Limits and Limitations

Here are some things to consider when you're working with connectors.

#### Create a Remote Connection

Create a remote connection to replicate external data.

The steps you take to create a connection to an external data source are the same for all the remote connectors. However, each connector has specific requirements and settings.

- 1. In Analytics, click the gear icon ( ) and then click **Data Manager** to open the data manager.
- **2.** In the data manager, click the Setup tab.

  The Setup tab displays a list of objects enabled for replication, organized by connection.

# 3. Click Set Up Replication.

You see your available connections. A Salesforce Local connection is already set up, and other connections that you create appear here, too.

# 4. Click Add Remote Connection.

The available connectors appear.

**5.** Click the connector you need, and enter the settings for that type of connection. All remote connections require these settings.

| Parameter       | Required? | Value   |
|-----------------|-----------|---|
| Connection Name | Yes       | Identifies the connection. Use a suitable convention that lets you easily distinguish between different connections.  |
| Developer Name  | Yes       | API name for the connection. This name is used in your dataflows to reference data extracted through this connection. For this reason, you can't edit the Developer Name after you create the connection. |

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To create a remote connection:

 Add Analytics Remote Connections OR Edit Analytics Dataflows

| Parameter   | Required? | Value                                      |
|-------------|-----------|--|
| Description | Yes       | Description of the connection for internal |
|             |           | use.                                       |

Use the links below to learn about the additional settings required for each type of connection.

### **6.** When you finish entering the settings, click **Save**.

The new connection appears on the select connection page, ready for use.

#### IN THIS SECTION:

#### Amazon RDS Connection Settings

Review settings and requirements for creating a connection using one of the Amazon RDS connectors.

### Amazon Redshift Connection Settings

Review settings and requirements for creating an Amazon Redshift connection.

# Google BigQuery Connection Settings

Review settings and requirements for creating a Google BigQuery connection.

#### Heroku Postgres Connection Settings

Review settings and requirements for creating a Heroku Postgres connection.

#### Microsoft Azure SQL Data Warehouse Connection Settings

Review settings and requirements for creating a Microsoft Azure SQL Data Warehouse connection.

### Microsoft Azure SQL Database Connection Settings

Review settings and requirements for creating a Microsoft Azure SQL Database connection.

#### Microsoft Dynamics CRM Connection Settings

Review settings and requirements for creating a connection to a Microsoft Dynamics 365 account.

#### Salesforce External Connection Settings

Review settings and requirements for creating a Salesforce External connection.

# Salesforce Marketing Cloud Contacts Connection Settings

Review settings and requirements for creating a Salesforce Marketing Cloud Contacts connection.

#### SAP HANA Connection Settings

Review settings and requirements for creating an SAP HANA connection.

#### Snowflake Computing Connection Settings

Review settings and requirements for creating a Snowflake Computing connection.

# **Amazon RDS Connection Settings**

Review settings and requirements for creating a connection using one of the Amazon RDS connectors.

Use these Amazon RDS connectors to connect to data managed on the Amazon Relational Database Service.

- AWS RDS Aurora MySQL
- AWS RDS Aurora PostgresSQL
- AWS RDS MariaDB
- AWS RDS MySQL

- AWS RDS Oracle
- AWS RDS PostgreSQL
- AWS RDS SQL Server



Note: Only SSL-enabled Amazon RDS instances are supported.

The connection settings are similar for all these connectors. In addition to the connection name, developer name, and description, provide these settings.

| Setting   | Required? | Value   |
|---|-----------|---|
| Database  | Yes       | Name of the database that you're connecting to.   |
| JDBC Connection URL   | Yes       | URL schema for the database.  Enter in the format: <pre>/port&gt;</pre> <pre>Note: If no port is specified, the default port is used.</pre>   |
| Username  | Yes       | User name to connect to the database.   |
| Schema  Note: This setting is not available for MariaDB and | No        | Schema name for the database. You must enter a schema name if the JDBC connection URL doesn't provide enough context.  • Microsoft SQL Server: Use the schema name to specify the correct object. |
| MySQL connections.  |           | <ul> <li>Oracle: The schema name is the username.</li> <li>PostgreSQL: Use the schema name to specify the correct object.</li> </ul>  |
| Password  | Yes       | Password to connect to the database.  |

## **Amazon Redshift Connection Settings**

Review settings and requirements for creating an Amazon Redshift connection.

Before you create a new Amazon Redshift connection, consider these requirements.

- The Redshift cluster that you're connecting to must have SSL enabled. See Configure Security Options for Connections in Amazon Web Services documentation for more information about using SSL.
- The Amazon S3 bucket that you specify must be accessible by Salesforce and have the expected access policies.

In addition to the connection name, developer name, and description, provide these settings.

| Setting                    | Required? | Value   |
|----------------------------|-----------|---|
| Master Symmetric Key       | No        | Your Amazon S3 encryption key. This must<br>be in a 256-bit AES encryption key in the<br>Base64 format. |
| AWS Secret Access Key      | Yes       | Your Amazon secret access key.  |
| Username                   | Yes       | User name for your Amazon Redshift account.   |
| Number Of Nodes in Cluster | Yes       | The number of nodes in the Amazon Redshift cluster.   |

| Setting           | Required? | Value   |
|-------------------|-----------|---|
| Schema            | Yes       | Your Amazon Redshift schema name. Only objects that exist within this schema are available for replication.   |
| AWS Access Key ID | Yes       | Your Amazon S3 bucket access key ID.  |
| Cluster Node Type | Yes       | Node type of the Amazon Redshift cluster.   |
| S3 Bucket Name    | Yes       | The name of your Amazon S3 bucket.  |
| JDBC URL          | Yes       | Your Amazon Redshift connection URL. See Obtain the JDBC URL in Amazon Web Services documentation for help obtaining this URL. Use the exact URL specified in the cluster database properties. Only the Redshift JDBC URL is supported. |
| Password          | Yes       | Password for your Amazon Redshift account.  |



**Important:** The data available for replication in the Amazon Redshift account is determined by the Amazon S3 bucket you specify.

# **Google BigQuery Connection Settings**

Review settings and requirements for creating a Google BigQuery connection.

In addition to the connection name, developer name, and description, provide these settings.



**Note:** When you create a service account with Google BigQuery, a JSON file of account properties is generated. Most of the connection settings you need are in this file.

| Setting             | Required? | Value  |
|---------------------|-----------|--|
| Schema              | Yes       | Name of the Google BigQuery Dataset ID you are connecting to.  |
| Service Account Key | Yes       | Enter the private_key value from the JSON file.  |
|                     |           | Note: Don'tinclude "private_key": "BEGIN PRIVATE KEY\n at the start of the key, and \nEND PRIVATE KEY\n" at the end.   |
| Service Account ID  | Yes       | Enter the client_email value from the JSON file.   |
| Storage Path        | No        | Path in Google Cloud Storage where a local stage file is created to store the data temporarily. Enter the bucket name or the bucket name and folder name. For example, enter<br>bucket_name> or <bucket_name> / <folder_name>.</folder_name></bucket_name> |
| Project ID          | Yes       | Enter the project_id value from the JSON file.  If you have multiple projects with the same service account, enter the ID of the project containing the dataset that you want to connect to.   |

Here are some things to consider when you replicate data with the Google BigQuery connector.

#### **Nested and Repeated Fields**

The connector flattens nested fields and replicates them as separate fields. In addition, the connector generates new rows for repeated fields. Let's look at an example. The contact data in this JSON file contains the current and previous address for each contact. The addresses field has nested status, street, city, and state fields. These nested fields appear twice for each contact: first for the current address, and then for the previous address.

```
{"id":"1", "name": "James Park", "addresses": [{"status": "current", "street": "1 Harper Alley", "city": "Toledo", "state": "OH"}, {"status": "previous", "street": "392 Parkside Street", "city": "Seattle", "state": "WA"}]} 
{"id": "2", "name": "Lori Carr", "addresses": [{"status": "current", "street": "7501 Talisman Court", "city": "Fort Worth", "state": "TX"}, {"status": "previous", "street": "3368 Anderson Lane", "city": "Moreno Valley", "state": "CA"}]}
```

If you include the addresses field for replication, each nested field appears as a separate field in each row of the replicated dataset. The repeated address fields result in two rows for each contact: one row for the current address, and one row for the previous address

| id | name       | addresses.status | addresses.street    | addresses.city | addresses.state |
|----|------------|------------------|---------------------|----------------|-----------------|
| 1  | James Park | current          | 1 Harper Alley      | Toledo         | ОН              |
| 1  | James Park | previous         | 392 Parkside Street | Seattle        | WA              |
| 2  | Lori Carr  | current          | 7501 Talisman Court | Fort Worth     | TX              |
| 2  | Lori Carr  | previous         | 3368 Anderson Lane  | Moreno Valley  | CA              |

#### **Temporary Destination Tables**

The connector creates temporary destination tables in BigQuery to stage data before serving it to the client. The connector names these tables in the format EA\_TEMP\_<5-character random string>\_<objectName>. Tables are usually deleted automatically. To avoid incurring additional data storage costs on Google BigQuery, check that all temporary tables have been deleted, and manually delete any tables that haven't been deleted.



Note: The service account that you use to connect to Google Big Query must have the Bigguery. Createtable permission.

#### **Heroku Postgres Connection Settings**

Review settings and requirements for creating a Heroku Postgres connection.

In addition to the connection name, developer name, and description, provide these settings for the database you are connecting to.



Tip: Go to the database in Heroku and click **View Credentials...** to view the settings you need.

| Setting             | Required? | Value  |
|---------------------|-----------|--|
| JDBC Connection URL | Yes       | The URL used to connect to the database. Enter in the format:              |
|                     |           | <pre>jdbc:postgresql://host:port/database</pre>                            |
|                     |           | For example:   |
|                     |           | jdbc:postgresql://ec1-23-45-67-89.compute-1.amazonaws.com:5432/sensors     |
|                     |           | Look for the host, port, and database details in the database credentials. |

| Setting  | Required? | Value   |
|----------|-----------|---|
| Username | Yes       | The database user, found in the database credentials.   |
| Schema   | No        | The name of the schema you want to use for the database. If no schema names have been specified for the database, you can enter <code>public</code> . |
| Password | Yes       | The database password, found in the database credentials.   |



Note: To access Heroku Postgres in Heroku Private Spaces, complete these steps before you create the connection.

- 1. Contact Heroku Support to activate Trusted IP ranges for data services in the space. Trusted IP ranges for data services is a beta feature.
- **2.** Add the Salesforce IP ranges to the Trusted IP ranges in the space. See the Salesforce IP Addresses & Domains knowledge article for a list of Salesforce IP ranges.



## **Microsoft Azure SQL Data Warehouse Connection Settings**

Review settings and requirements for creating a Microsoft Azure SQL Data Warehouse connection.

In addition to the connection name, developer name, and description, provide these settings.

| Setting                 | Required? | Value  |
|-------------------------|-----------|--|
| Azure DW JDBC URL       | Yes       | Microsoft Azure Data Warehouse JDBC connection string.  Example: database.windows.net:1433 |
| Azure DW JDBC Password  | Yes       | Password to connect to the Microsoft Azure SQL Data Warehouse account.                     |
| Azure Blob Account Name | Yes       | Name of the Microsoft Azure Storage account to stage the files.                            |
| Database                | Yes       | Name of the Microsoft Azure database that you are connecting to.                           |
| Azure DW JDBC Username  | Yes       | User name to connect to the Microsoft Azure SQL Data Warehouse account.                    |
| Azure Blob Account Key  | Yes       | Microsoft Azure Storage access key to stage the files.                                     |
| Azure DW Schema Name    | No        | Name of the schema in Microsoft Azure SQL Data Warehouse.                                  |

# **Microsoft Azure SQL Database Connection Settings**

Review settings and requirements for creating a Microsoft Azure SQL Database connection.

In addition to the connection name, developer name, and description, provide these settings.

| Setting  | Required? | Value                              |
|----------|-----------|------------------------------------|
| Database | Yes       | Microsoft Azure SQL database name. |

| Setting             | Required? | Value  |
|---------------------|-----------|--|
| JDBC Connection URL | Yes       | URL schema for the database.  Enter in the format: <host>:<port></port></host>   |
| Username            | Yes       | User name for the database login.  Enter in the format: <username>@<host></host></username>  |
| Schema              | No        | Schema name for the database. You must enter a schema name if the JDBC connection URL doesn't provide enough context.  The default value is <i>dbo</i> |
| Password            | Yes       | Password for the database login.   |

# **Microsoft Dynamics CRM Connection Settings**

Review settings and requirements for creating a connection to a Microsoft Dynamics 365 account.

In addition to the connection name, developer name, and description, provide these settings.

| Setting               | Required? | Value  |
|-----------------------|-----------|--|
| Username              | Yes       | User ID registered with Microsoft Dynamics CRM.  |
| Organization Name     | Yes       | Microsoft Dynamics CRM organization name. Organization names are case-sensitive.   |
| Discovery Service URL | Yes       | URL of the Microsoft Dynamics CRM service.   |
|                       |           | Enter a URL in the format: <a href="https&gt;://&lt;Application">https&gt;://<application< a=""> server name&gt;:<port>/ XRMService/2011/Discovery.svc</port></application<></a> |
| Domain                | Yes       | Domain to which the user belongs. Enter the complete domain name. For example, msd.sampledomain.com.   |
| Authentication Type   | Yes       | Authentication type for the connection. Enter Passport   |
|                       |           | Note: Analytics supports only the Passport authentication type for Microsoft Dynamics CRM connections.   |
| Password              | Yes       | Password to authenticate the user specified in Username.   |

Important: The data available for replication is determined by the security settings of the user that you use to connect.

# **Salesforce External Connection Settings**

Review settings and requirements for creating a Salesforce External connection.

In addition to the connection name, developer name, and description, provide these settings.

| Setting     | Required? | Value   |
|-------------|-----------|---|
| Username    | Yes       | User name used to connect to external Salesforce org for replication of objects and fields.   |
| Service URL | Yes       | Login URL for the external org. This is completed for you, but you can change it if the org is a sandbox org or uses a custom domain.   |
| Password    | Yes       | Password for the user specified in Username.<br>You may have to append the user's security<br>token to the end of the password. For more<br>information about obtaining a security<br>token, see Reset Your Security Token. |

(1) Important: The objects and fields available for replication in the external org are determined by the security settings of the user that you use to connect.

# **Salesforce Marketing Cloud Contacts Connection Settings**

Review settings and requirements for creating a Salesforce Marketing Cloud Contacts connection.

In addition to the connection name, developer name, and description, provide these settings.

| Setting                        | Required? | Value   |
|--------------------------------|-----------|---|
| Username                       | Yes       | The Salesforce Marketing Cloud username.  |
| ClientSecret                   | Yes       | The client secret of Salesforce Marketing<br>Cloud required to generate a valid access<br>token.                        |
| ClientId                       | Yes       | The client ID of Salesforce Marketing Cloud required to generate a valid access token.                                  |
| Salesforce Marketing Cloud Url | Yes       | The URL used to connect to the Salesforce<br>Marketing Cloud WSDL. This is already<br>completed, but you can change it. |
| UTC Offset                     | No        | Used to read data from Salesforce Marketing<br>Cloud in a UTC offset time zone.   |
| Password                       | Yes       | The password for the Salesforce Marketing Cloud username.   |

(1) Important: The objects and fields available for replication are determined by the security settings of the user that you use to connect.



**Note:** The Salesforce Marketing Cloud Contacts connector supports these types of data extensions:

- System Data.Contact
- System Contact Linked Data Extension, and Child and Grandchild System Contact Linked Data Extensions
- Custom Contact Linked Data Extension, and Child and Grandchild Custom Contact Linked Data Extensions
- Non-Contact Linked Data Extension

## **SAP HANA Connection Settings**

Review settings and requirements for creating an SAP HANA connection.



Note: The SAP HANA connector is an OData-based connector.

In addition to the connection name, developer name, and description, provide these settings.

| Setting  | Required? | Value  |
|----------|-----------|--|
| URL      | Yes       | SAP HANA database connection string.   |
|          |           | Example:<br>https://conectoriaratp.harbrial.onimarcl.com/fzdrage/frodot/DataService.xonita |
| Password | Yes       | Password to connect to the SAP HANA database.  |
| Username | Yes       | User name to connect to the SAP HANA database.   |

# **Snowflake Computing Connection Settings**

Review settings and requirements for creating a Snowflake Computing connection.

In addition to the connection name, developer name, and description, provide these settings.

| Setting                        | Required? | Value  |
|--------------------------------|-----------|--|
| Schema                         | Yes       | Snowflake schema name.   |
| Password                       | Yes       | Password for your Snowflake account.                               |
| Database                       | Yes       | Snowflake database name.   |
| Role                           | No        | Snowflake role assigned to the user that you are using to connect. |
| Additional JDBC URL Parameters | No        | One or more JDBC connection parameters.<br>Enter in the format     |
|                                |           | parareterl=alve@arareter2=alve@arareter3=alve                      |
|                                |           | For example:   |
|                                |           | ver=jateswarehovenyhidonydbisdena-public                           |
| Warehouse                      | Yes       | Snowflake warehouse name.  |
| Username                       | Yes       | User name for the Snowflake account.                               |

| Setting | Required? | Value   |
|---------|-----------|---|
| Account | Yes       | Name of your Snowflake account.   |
|         |           | Tip: The account name is the first segment in the domain in your Snowflake URL. For example,  123abc is your account name in https://123bc.srowtlakeconputing.com |



**Note:** A Snowflake warehouse can be set to automatically resume or suspend. Review the Snowflake documentation for information about the optimal use of these features.

Enable Replication for an Object with a Connection

Use a connection to enable replication for objects in the connected data source.

The steps you take to use a connection to are the same for all connectors.

- 1. In Analytics, click the gear icon ( ) and then click **Data Manager** to open the data manager.
- 2. In the data manager, click the Setup tab.

  The Setup tab displays a list of objects enabled for replication, organized by connector type.
- 3. Click Set Up Replication.

You see your available connections.

- **4.** Click the connection you need.
  A list of objects available through the selected connection is displayed. Objects already enabled are not available for selection.
- 5. Click the object you want to enable for replication, and click Continue.
- **6.** Select the fields you want to enable for replication, and click **Continue**.
- 7. On the Preview Source Data page, review the data.
- 8. If you are using the Salesforce Local connector, you can filter the data that's replicated. Click



- **a.** Enter a filter using a Salesforce Object Query Language (SOQL) WHERE clause expression. For example:
  - RecordType = 'B2B' AND Status = 'Open'
- b. Click Done.
  - Note: Your preview data does not reflect any filter you add. Filters are only applied when the replication dataflow runs.
- 9. To view or edit a field's attributes, click the field's column header, and then click .

  The field attributes appear in a panel on the right. You can edit a field's label and type, and settings such as default value and precision.

  Edit attributes to ensure that the data is consistent with data from other sources.
  - Note: Only changes to the field label appear in the preview data. Other changes are applied when you run the replication. Field attributes for local replications are read only.

# **EDITIONS**

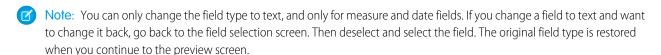
Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# USER PERMISSIONS

To create a connection:

Edit Analytics Dataflows



#### 10. When you finish, click Save.

The new object appears on the Setup tab, with other objects using the same connector type.

(1) Important: Objects that you enable for replication will be replicated the next time replication runs. To make the data available in a dataflow or recipe right away, run replication manually.

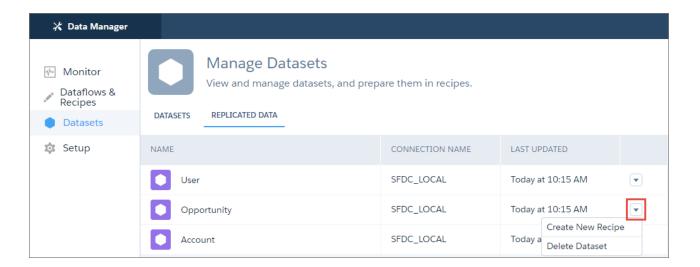
Prepare Replicated Data in Dataflows and Recipes

After replication has run, you can prepare replicated data in dataflows and recipes.

For dataflows, use the digest transformation to extract data from the replicated object.

In the dataflow editor, use the digest node button ( ) to add the transformation to a dataflow. If you're working in the dataflow JSON, add a digest node to your dataflow definition file. See digest Transformation for more information.

To prepare replicated data in a recipe, go to the Datasets tab in the data manager. Open the Replicated Data tab, and select **Create New Recipe** from the actions list next to the data you want to prepare.



Note: You can also add replicated data as lookup data in a recipe.

#### **Connectors Limits and Limitations**

Here are some things to consider when you're working with connectors.

- You can replicate data from up to 50 objects in Analytics. This total includes local and external objects.
- Analytics can extract up to either 20 million rows or 10 GB from an object, depending on which limit is reached first.
- Incremental extracts and filters are only available with the Salesforce Local connector.
- Data read time for a connection depends on the connector type.
- Note: Each external data source may have its own limits.

# Load External Data from CSV and Microsoft® Excel

You can load external data directly into a dataset from a .csv file or from Microsoft Excel. The dataset can be explored right away in a lens, added to a dashboard, or prepared with other data in a dataflow or recipe.

#### IN THIS SECTION:

#### Upload External Data from the User Interface

Use the upload user interface to create a single dataset based on external .csv data. To refresh the data, you can overwrite the data in the dataset by uploading a new external data file.

## Einstein Analytics Connector for Excel

The Salesforce Einstein Analytics Connector for Excel makes it easy to import data from Microsoft Excel 2013 to Analytics.

#### External Data API

You can use the External Data API to create a single dataset based on external data in the .csv format. You can also use the API to edit the dataset by uploading a new .csv file. When you edit the dataset, you can choose to overwrite all records, append records, update records, or delete records.

# Upload External Data from the User Interface

Use the upload user interface to create a single dataset based on external .csv data. To refresh the data, you can overwrite the data in the dataset by uploading a new external data file.

When Analytics loads any data into a dataset, it also adds metadata about each column of data. For example, metadata can include the field type, precision, scale, and default value.

For external data, Analytics infers metadata about each column of data in the external data file unless you specify different metadata attributes in a metadata file. A *metadata file* is a JSON file that describes the structure of an external data file. For example, you can use a metadata file to explicitly set the field type and default value for a specific column of external data. If no metadata file is provided when you upload external data, Analytics treats every column as a dimension and sets the field type to 'Text.' This impacts the type of queries that can be placed on the dataset because you can't perform mathematical calculations on dataset columns with a Text field type. You can only perform mathematical calculations on dataset columns with a Numeric field type.

After you create a dataset based on an external data file, you can edit the dataset to apply a new metadata file. This enables you to change the metadata attributes of each column.



**Note**: Analytics temporarily stores the uploaded CSV and metadata files for processing only. After a dataset is created, Analytics purges the files.

#### IN THIS SECTION:

#### Create a Dataset with External Data

You can either upload external data through the user interface or through the External Data API to create a dataset. When you upload an external data file, you can also provide a metadata file. A metadata file contains metadata attributes that describe the structure of the data in the external data file. If you upload a .csv from the user interface, Analytics automatically generates the metadata, which you can preview and change.

## Create a Dataset with External Data

You can either upload external data through the user interface or through the External Data API to create a dataset. When you upload an external data file, you can also provide a metadata file. A metadata file contains metadata attributes that describe the structure of the data in the external data file. If you upload a .csv from the user interface, Analytics automatically generates the metadata, which you can preview and change.



Tip: Analytics temporarily stores the uploaded CSV and metadata files for processing only. After the datasets are created, Analytics purges the files. If you want to use the files again later, keep a copy.

Before uploading external data files, review the format requirements and examples of the .csv and metadata files in the Analytics External Data Format Reference.



Note: You can also use the External Data API to upload external data files. Use the API to take advantage of additional features, like performing incremental extracts and performing append, delete, and upsert operations. For more information about the External Data API, see the External Data API Developer's Guide.

- 1. On the home or app page, click **Create** > **Dataset**.
- 2. Select CSV File as the data source and click Continue.
- **3.** Select the .csv file to upload by performing one of these steps.
  - **a.** Click **Select a file or drag it here**, then select the file and click **Open**.
  - **b.** Drag the file into the file drop area.

#### 4. Click Next.

- 5. In the Dataset Name field, enter a name for the dataset. By default, Analytics uses the file name as the dataset name. The name cannot exceed 80 characters.
- **6.** Select the app where the dataset will be created. By default, Analytics selects your My Private App. To change an app, click the cross on it and select a different one.
- 7. In the File Properties Detected box, check that Analytics has correctly identified the properties of your file. In most cases, Analytics correctly identifies your file properties. If it doesn't, your data may not load correctly and you will see unexpected results when you preview the data on the next screen. To edit the file properties, click 🔻 and select **Edit**.
  - Note: Analytics also generates a data schema file for your data. This file contains properties such as field labels, field types, and settings. You can view and change these schema properties when you preview the data on the next screen. However, if you want to download the file first, or replace it with your own file, click 🔻 in the Data Schema File field.

#### 8. Click Next.

The Edit Field Attributes screen appears. Here, you can preview the data, and view or edit the attributes for each field.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, Performance, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To upload external data:

Upload External Data to **Analytics** 



- **9.** To view or change a field's attributes, either click the field in the list on the left, or click the field's column. Field attributes appear in a panel on the right. The field attributes that you see are determined by the field type.
  - (1) Important: Analytics detects the format for date fields based on a sample of values. If the sample contains values with unsupported formats or a mixture of formats, Analytics sets the field type to Text. If you change the date format that Analytics detects, rows with a different format will fail.

Consider this example data.

| Row | SIC Code | SIC Description              | Last Updated |
|-----|----------|------------------------------|--------------|
| 1   | 1110     | Barley growing               | 1/10/17      |
| 2   | 1120     | Rice growing                 | 11/14/17     |
| 3   | 1130     | Alliaceous vegetable growing | 1/1/17       |

Analytics detects the date format for the Last Updated field as M/d/yy. This format displays months and days below 10 without leading zeros, and years as 2 digits, as in 1/1/17. If you change the format to MM/dd/yy, rows 1 and 3 will fail because Analytics expects the month and day parts of the date values to have 2 digits.

**10.** When you have finished editing field attributes, click **Next**. The file is uploaded and the dataset is gueued to be created.

#### 11. Click Got It.

### IN THIS SECTION:

## Rules for Automatic Generation of a Metadata File

When you upload a CSV file from the user interface, Analytics automatically generates the metadata file as long as the CSV file meets certain requirements.

#### Monitor an External Data Upload

When you upload an external data file, Analytics kicks off a job that uploads the data into the specified dataset. You can use the Monitor tab of the data manager to monitor and troubleshoot the upload job.

## Rules for Automatic Generation of a Metadata File

When you upload a CSV file from the user interface, Analytics automatically generates the metadata file as long as the CSV file meets certain requirements.

To enable Analytics to generate the metadata file, a CSV file must meet the following requirements.

- The file type must be .csv, not .gz or .zip.
- The file must contain one row for the column header and at least one record.
- The CSV file must meet all Analytics requirements as mentioned in the Analytics External Data Format Reference.

Analytics generates the metadata attributes for each CSV column based on the first 100 rows in the CSV file. Analytics uses the following rules to convert the CSV column names to field labels.

- Replaces special characters and spaces with underscores. For example, "Stage Name" becomes "Stage\_Name."
- Replaces consecutive underscores with one underscore, except when column name ends with "\_\_c." For example, "stage\*&name"
   becomes "stage\_name."
- Prefixes the field label with "X" when the first character of the column name is numeric. For example, "30Day" becomes "X30Day."
- Replaces the field name with "Column" + column number when all characters in the column name are not alphanumeric. For example, the fourth column name "\*&^\*(&\*(%" becomes "Column4."
- Deletes underscores at the beginning and end of the field label to ensure that it doesn't start or end with an underscore.
- Increments the derived field label if the label is the same as an existing label. For example, if "X2" already exists, uses "X21," "X22," "X23."



Tip: You can download the generated metadata file to change the metadata settings, and then upload it to apply the changes. You can download the metadata file when you create or edit a dataset.

#### **Monitor an External Data Upload**

When you upload an external data file, Analytics kicks off a job that uploads the data into the specified dataset. You can use the Monitor tab of the data manager to monitor and troubleshoot the upload job.

The Jobs subtab of the Monitor tab shows the status, start time, and duration of each dataflow, replication, recipe, and external data upload job. It shows jobs for the last 7 days.

# **EDITIONS**

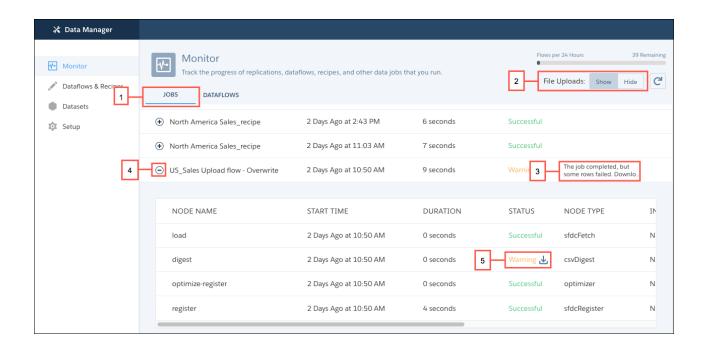
Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

## **USER PERMISSIONS**

To access the Monitor tab of the data manager:

 Edit Analytics Dataflows, Upload External Data to Analytics, or Manage Analytics



- In Analytics, click the gear icon ( ) and then click **Data Manager**.

  The data manager opens on the Monitor tab, with the Jobs subtab selected by default. It displays each upload job name as <dataset name upload flow>. You can hover a job to view the entire name.
  - Note: To view external data upload jobs in the Jobs view, make sure that the File Uploads selector (2) is set to **Show**. Show is the default selection.
- To see the latest status of a job, click the Refresh Jobs button ( ). Each job can have one of these statuses.

| Status     | Description   |
|------------|---|
| Queued     | The job is in queue to start.                         |
| Running    | The job is running.                                   |
| Failed     | The job failed.                                       |
| Successful | The job completed successfully.                       |
| Warning    | The job completed successfully, but some rows failed. |

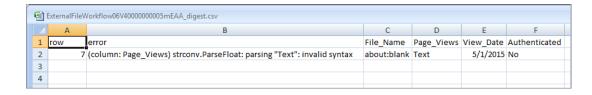
A message (3) is displayed next to jobs with a status of Warning or Failed . If you can't see the complete message, click the message to view all of it.

- **3.** To view the run-time details for a job, expand the job node (4). The run-time details display under the job. In the run-time details section, scroll to the right to view information about the rows that were processed.
- **4.** To troubleshoot a job that has failed rows, view the error message. If an error log is available, click the status text or download button (5) to download the log.

✓ N

Note: Only the user who uploaded the external data file can download the error log.

The error log contains a list of failed rows.



**5.** To troubleshoot a failed job, view the error message and the run-time details.

# Einstein Analytics Connector for Excel

The Salesforce Einstein Analytics Connector for Excel makes it easy to import data from Microsoft Excel 2013 to Analytics.

The Einstein Analytics Connector for Excel is available as an add-in for Excel 2013 on the desktop and Excel Online in Office 365. The Connector is available from the Office Add-In Store or your organization's private add-in catalog. After you install the Connector just point and click to import data from Excel to Analytics.

Considerations When Using the Einstein Analytics Connector for Excel

- The Einstein Analytics Connector for Excel doesn't support loading data to Salesforce orgs that use custom domains. To load Excel data to a custom domain org, save the data locally in .csv format, and then use the Analytics .csv upload tool to load the data.
- Null measure handling isn't supported when you load data using the Einstein Analytics Connector for Excel. Null measure values are replaced with zeros in the resulting dataset, even if null measure handling is enabled in your org.

## IN THIS SECTION:

#### Install the Einstein Analytics Connector for Excel

The Salesforce Einstein Analytics Connector for Excel gives you a fast, easy way to import data from Excel 2013 into Analytics.

# Install the Einstein Analytics Connector for Excel

The Salesforce Einstein Analytics Connector for Excel gives you a fast, easy way to import data from Excel 2013 into Analytics.

If you use Excel 2013 on the desktop or Office 365, the Office Online version of Excel, the Einstein Analytics Connector for Excel gives you a great way to get your data into Analytics. After installing the Connector, you just select data from Excel, click **Submit Data**, and the Connector does the work for you, importing the data to Analytics and creating a dataset.

Here's how to install the Connector:

- 1. Open Excel, either on your desktop or in Office Online.
- 2. Click the **Insert** tab.
- 3. Click Store.
- 4. Search for the Einstein Analytics Connector for Excel, and click Add to install it.
- **5.** Click **Log in to Salesforce**, and enter your Salesforce credentials to open the Connector.

# **USER PERMISSIONS**

To import data from Excel 2013 to Analytics:

 Upload External Data to Analytics Once you've installed the Connector, follow the instructions in the Connector window to create datasets from your Excel data. Opening the Connector automatically logs you in to Analytics. Click the Connector Help icon for complete information about using the app.

#### External Data API

You can use the External Data API to create a single dataset based on external data in the .csv format. You can also use the API to edit the dataset by uploading a new .csv file. When you edit the dataset, you can choose to overwrite all records, append records, update records, or delete records.

For more information about the External Data API, see the Analytics External Data API Developer Guide.

# Prepare Data in Analytics

Data preparation is the process of transforming your data into a form that's meaningful and valuable to the people exploring it. This preparation can include combining data from different sources, calculating new values, and cleaning data so that it's consistent and meaningful. Analytics gives you two ways to prepare your data: dataflow and dataset recipes.

The dataflow provides an end-to-end process that lets you load data from its source, prepare it, and output the results to one or more datasets.

A dataset recipe provides a data preparation process only. Use a recipe to prepare data from datasets and replications to create a single dataset

So which one's right for you? Well, that depends on your skills and what you want to achieve. Here are a few key features unique to each tool to help you decide.



**Note**: Dataflows and recipes are not mutually exclusive. Many people use both to meet more complex data preparation requirements.

### **Dataflow**

Use a dataflow to extract data directly from Salesforce objects, replications, or existing datasets, and prepare it, all in the same process. A dataflow lets you apply the full range of Analytics transformations using a drag-and-drop dataflow editor. Or for even finer control, you can manually edit the underlying JSON code.

With a dataflow you can:

- Design complex data preparation flows with the visual dataflow editor.
- Edit the underlying JSON for fine control.
- Create or update multiple datasets at the same time.
- Create complex formulas to calculate new values using SAQL expressions.
- Perform calculations across rows to derive new data for trending analysis.
- Update values with values from other sources.
- Flatten hierarchical data for use in dataset security predicates.

Dataflows are great for advanced Analytics developers who prefer to work in a visual editor and those who prefer to work in the JSON.

## **Dataset Recipe**

Use a dataset recipe as a standalone data preparation tool for single datasets, or use it to prepare data before or after it goes through your dataflow. A recipe guides you with suggestions and completes transformations settings for you based on your data.

With a recipe you can:

- Preview your data and how it changes as you prepare it.
- Quickly remove fields or change field labels.
- Get smart suggestions on how to transform your data.
- Analyze the quality of your data with column profiles and get smart suggestions on how to improve it.
- Bucket values without having to write complex SAQL expressions.
- Create calculated fields with a visual formula builder.
- Easily transform values to ensure data consistency, in a point-and-click transformation panel. You can bucket values, trim, split, and replace them, and change case. No formulas required!
- See the history of all your changes, and back up or move forward to replay it.

Recipes are great for Salesforce admins with no experience of integration, or for more experienced data wranglers who just want to get stuff done without learning about the dataflow.

# Features at a Glance

Still unsure which tool to choose? Use this table to compare them side-by-side.

| Feature  | Dataflow               | Dataset Editor  |
|--|------------------------|---|
| Graphical user interface                           | ~                      | ~   |
| Edit underlying JSON code                          | ~                      |   |
| Preview data                                       |                        | ~   |
| Preview results of transformations                 |                        | ~   |
| Step forward and backward through transformations  |                        | ~   |
| Create or update multiple datasets at a time       | ~                      |   |
| Smart transformation suggestions                   |                        | <u>~</u>  |
| Column profiles to analyze data quality            |                        | <u>~</u>  |
| Data-cleaning transformations                      | Using SAQL expressions | Trim, Uppercase, Lowercase, Split,<br>Substring, Replace, Extract |
| Calculate new vales from existing data             | Using SAQL expressions | Using interactive formula builder                                 |
| Bucket values                                      | Using SAQL expressions | Through user interface  |
| Augment columns from other datasets                | ~                      | ~   |
| Append rows from other datasets                    | ~                      | ~   |
| Update values with values from another dataset     | ~                      |   |
| Calculate trending values across rows in a dataset | ~                      |   |
| Flatten hierarchical data                          | ~                      |   |

## IN THIS SECTION:

#### Prepare Datasets with Recipes

A dataset recipe is a user-interface tool that lets you take data from your existing datasets and replications, prepare it, and output the results to a new dataset. Use a recipe to combine data from multiple datasets or replications, bucket the data, add formula fields, and cleanse the data by transforming field values. You can remove fields and filter rows that you don't need, before you create the target dataset.

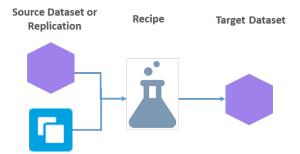
#### SEE ALSO:

Create Datasets with the Dataflow

# Prepare Datasets with Recipes

A dataset recipe is a user-interface tool that lets you take data from your existing datasets and replications, prepare it, and output the results to a new dataset. Use a recipe to combine data from multiple datasets or replications, bucket the data, add formula fields, and cleanse the data by transforming field values. You can remove fields and filter rows that you don't need, before you create the target dataset.

A dataset recipe is simply a saved set of transformations, or steps, that you want to perform on a specific source dataset or replication. When you run a recipe, it applies the transformations and outputs the results to a new target dataset. You can schedule a recipe to run on a recurring basis to keep your target dataset up to date.



Use a recipe to combine data from different sources, and modify field values to ensure consistency in the new dataset you create. This new dataset can then be used as a standalone dataset for exploration or dashboard creation, or used in your dataflows or other recipes.

Here's what you can do with your source data in a recipe:

- Add fields from another dataset or replication.
- Remove fields.
- Filter rows.
- Add bucket fields.
- Add formula fields.
- Transform field values.

#### IN THIS SECTION:

#### Create a Dataset Recipe

Use a recipe to clean and combine data from multiple datasets or replications. Add bucket and formula fields, filter rows, and transform field values. You can then output the results to a new target dataset.

## Manage Dataset Recipes

View the status of your recipes and target datasets on the Dataflows & Recipes tab of the data manager. You can also edit, run, schedule, and delete recipes here.

# Create a Dataset Recipe

Use a recipe to clean and combine data from multiple datasets or replications. Add bucket and formula fields, filter rows, and transform field values. You can then output the results to a new target dataset.



Tip: Before you get started, it's a good idea to think about the requirements for the target dataset you want to create. Consider these questions:

- Does the data you want to work with exist in a dataset or as a replicated object?
- If you are combining data, how is the data related?
- What fields do you want in the target dataset?
- Do you need to transform any field values?
- In what app are you going to create the target dataset?
- Do you need to control access to the data in the target dataset?

When you're ready, follow these steps to create a dataset recipe.

#### IN THIS SECTION:

#### Start a Dataset Recipe

To start a dataset recipe, perform the following steps.

#### Set Preview Data in a Dataset Recipe

A dataset recipe displays a preview of your data as you work. You can set the fields and number of rows that appear in this preview. If you are working with a large set of data, reducing the size of the preview speeds up the data refresh as you add steps to your recipe.

#### Add Data in a Dataset Recipe

Combine data in a recipe by adding fields from other datasets or replications.

# Add Rows in a Dataset Recipe with Append

Use append to add rows to the data in your recipe from another dataset or replication. Fields are mapped automatically, or you can map them manually.

## Clean and Prepare Data Intelligently with Column Profiles and Smart Suggestions

The column profile gives you key insights into the quality of your data and suggests additional transformations to help you clean and prepare it. This profile is especially useful when you are combining data from different sources, where inconsistencies are often introduced.

### Add a Filter in a Dataset Recipe

Filter data in a dataset recipe to remove rows that you don't need in your target dataset.

#### Bucket a Measure Field in a Dataset Recipe

Add a field to a dataset recipe to bucket values in a specified measure field.

# Bucket a Dimension Field in a Dataset Recipe

Add a field to a dataset recipe to bucket values in a specified dimension field.

# Bucket a Date Field in a Dataset Recipe

Add a field to a dataset recipe to bucket values in a specified date field.

## Add a Formula Field in a Dataset Recipe

Add a formula field to calculate new values from measures in your recipe, using arithmetic operators and math functions.

#### Transform Fields in a Dataset Recipe

Data is not always consistent, especially when you combine data from different sources. In a dataset recipe, you can transform fields to ensure that values are consistent in your target dataset. Change case, split values to get just the parts you need, and replace incorrect values.

#### Navigate Fields in a Dataset Recipe

As you add data and transform fields, the number of fields in your recipe preview increases. This makes it harder to find the fields that you want to work with. Use the field navigator to quickly find the fields that you need, and hide the ones you don't.

### Navigate and Edit Recipe Steps

As you prepare your data, each change you make appears as a recipe step on the left. Think of these steps as your recipe history. You can move back and forward through this history to see how the data looks at different stages of the recipe. If you don't like what you see, you can edit or remove any step.

#### Save a Dataset Recipe

If you're not ready to create the target dataset, save the recipe and come back to it later. Saving simply saves your steps without you having to create the dataset.

#### Run a Dataset Recipe

Run a new recipe to create a target dataset, or run an existing recipe to update a target dataset.

# Start a Dataset Recipe

To start a dataset recipe, perform the following steps.

- 1. In Analytics, click the gear icon ( ) and then click **Data Manager** to open the data manager. The data manager opens in a new browser tab.
- 2. In the data manager, click the Dataflows & Recipes tab.
- **3.** In the Dataflows & Recipes tab, click the Dataset Recipes subtab. The Dataset Recipes subtab displays a list of your existing recipes.
- 4. Click Create Recipe.
- **5.** From the list of published datasets, click the one that contains the data you want to prepare. Alternatively, if you have enabled replication, you can click the **Replicated** tab to select a replication instead.
  - Note: Make sure the replication you select has run and completed at least once.

You are prompted to enter a name for the recipe.

- **6.** Enter a recipe name and then click **Continue**.
  - Note: The recipe name you enter here is also used for the target dataset name.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# USER PERMISSIONS

#### To create a recipe:

 Edit Analytics Dataflows OR Edit Dataset Recipes

The dataset recipe page opens, displaying a preview of the data from your selected dataset or replication.

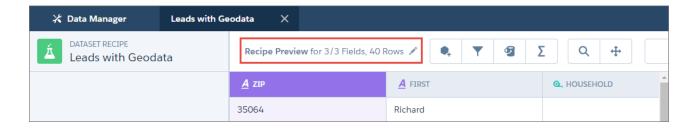
## Set Preview Data in a Dataset Recipe

A dataset recipe displays a preview of your data as you work. You can set the fields and number of rows that appear in this preview. If you are working with a large set of data, reducing the size of the preview speeds up the data refresh as you add steps to your recipe.

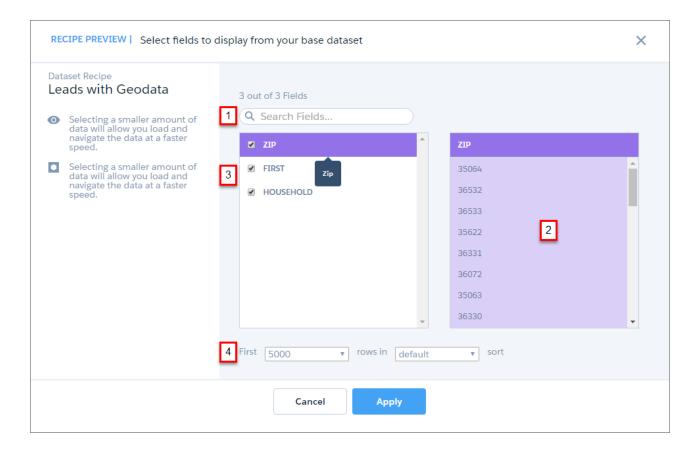


**Note**: If you're working with a replicated dataset of more than 10,000 rows, Analytics loads a sample of 10,000 rows into the recipe.

As you work in a dataset recipe, the size of your preview is always visible at the top of the page.



Click the to view or change what you see in the preview.



Here's what you can do to set your recipe preview data:

- 1. Can't see a field in the list? Start typing the field name here to narrow down the list.
- 2. Not sure if you need a field in your preview? Click a field in the list to see a preview of its values here.
- 3. Don't need a field in your preview? Uncheck it here to remove it.
- **4.** Want fewer rows in your preview? Choose to see the first 1000, 5000, or 10000 rows and select a field to sort them by.

Click **Apply** when you're done, to return to the recipe.



**Note**: The recipe preview can display up to 100 fields. If you remove a field from the preview, by default it's not included in the target dataset. However, you can reselect any field when you create the dataset.

## Add Data in a Dataset Recipe

Combine data in a recipe by adding fields from other datasets or replications.

When you add data to a recipe, you select the lookup dataset or replicated object that contains the fields you want to add. You also select the merge key fields to match the records in the existing and new data. For example, to add User fields to Opportunity records, use the User Id and Opportunity Owner Id fields as your merge keys.

Let's look at another example here, to illustrate how you add data. Imagine you have started a recipe from a US Leads dataset, and you want to add demographic data based on zip code from another dataset. You can use the Zip Code field from each dataset as the merge keys.

- 1. On the dataset recipe page, click the Add Data button ( ).
- 2. Select either the Published or Replicated tab, and click the dataset or object you want to add.



# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

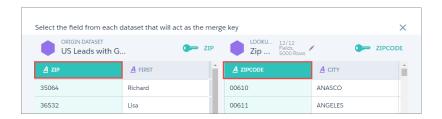
Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To create a recipe:

 Edit Analytics Dataflows OR Edit Dataset Recipes

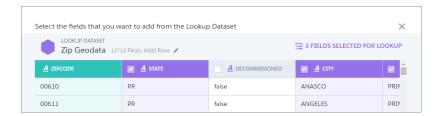
**3.** Analytics suggests merge keys if it can. To select your own, click a column header to select it as the merge key field in the origin dataset, and do the same in the lookup dataset.



**4.** To select additional merge keys, click **+Add Another**.

Use multiple merge keys to improve matching. For example, imagine you're adding contact information to lead data. Using names alone to match can result in duplicate matches when different leads have the same name. Use two merge keys to match on name and company to ensure you're matching the right data. You can use up to 5 merge keys.

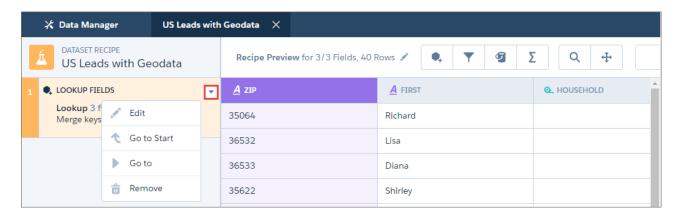
- Important: Analytics datasets contain date and time component fields, such as Year, Quarter, and Month, that are derived automatically from existing date and time fields. Use of these component fields as merge keys isn't supported.
- 5. Click Continue.
- **6.** Click the column header or column checkbox to select each field that you want to add.



#### Then click Continue.

Note: The lookup dataset preview can display up to 100 fields. Modify the preview or hide fields to ensure that you can see just the fields that you need. When you create the dataset, you can select all the lookup fields you want for the new dataset.

Each time you add data, a new step is created in your recipe, and the added fields appear in your recipe preview. Hover over a step and click to access edit and remove options.



# Add Rows in a Dataset Recipe with Append

Use append to add rows to the data in your recipe from another dataset or replication. Fields are mapped automatically, or you can map them manually.

Let's look at an example of how you can use append in a recipe. Imagine you're a US company that uses separate Salesforce orgs for its US and Canada operations. You replicate the US opportunities in your local org, and use a remote Salesforce connection to replicate your Canada opportunities. You want to combine these US and Canada opportunities to create a single North America opportunities dataset.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To create a recipe:

 Edit Analytics Dataflows OR Edit Dataset Recipes

| Opportunity Name            | Billing Country | Currency | Stage          | Amount    | Close Date | Lead Source   |
|-----------------------------|-----------------|----------|----------------|-----------|------------|---------------|
| Opportunity for Vasquez1005 | USA             | USD      | Closed Won     | 269,400   | 8/24/17    | Trade Show    |
| Opportunity for Collier1376 | USA             | USD      | Prospecting    | 89,230    | 2/22/18    | Trade Show    |
| Opportunity for Moran1395   | USA             | USD      | Closed Won     | 234,500   | 11/5/16    | Word of mouth |
| Opportunity for Keller1431  | USA             | USD      | Needs Analysis | 2,894,390 | 2/10/18    | Trade Show    |



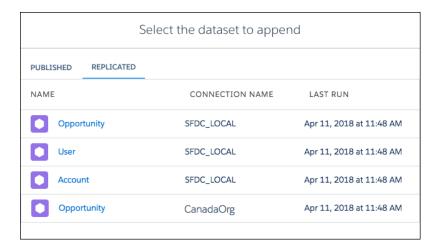
| Opportunity Name            | Billing Country | Currency | Stage             | Value     | Close Date |
|-----------------------------|-----------------|----------|-------------------|-----------|------------|
| Opportunity for Frazier644  | Canada          | CAD      | Qualification     | 1,528,750 | 2/28/18    |
| Opportunity for Weber1078   | Canada          | CAD      | Value Proposition | 36,960    | 3/17/18    |
| Opportunity for Todd162     | Canada          | CAD      | Prospecting       | 465,500   | 3/28/18    |
| Opportunity for Barnett1692 | Canada          | CAD      | Needs Analysis    | 4,708,010 | 1/21/18    |

You've already started the recipe from your replicated US opportunities dataset (1), to which you now want to append data from your replicated Canada opportunities dataset (2). Notice that the fields are not exactly the same. The US data has an Amount field and the Canada data has a Value field. The US data has a Lead Source field, which the Canada data doesn't have. These kinds of differences affect how appended fields can be mapped to fields in the recipe.

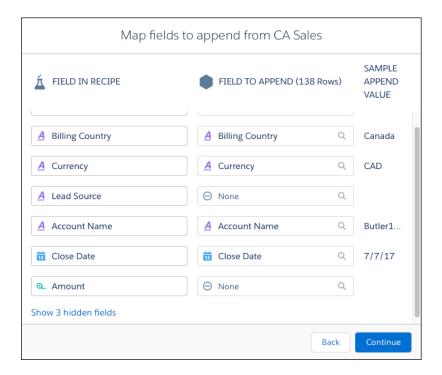
- Appended fields are mapped automatically to recipe fields with the same name and type. You can change these mappings. In this example, the Currency field will be mapped automatically.
- Appended fields with different names are not mapped automatically, but you can map them to any fields of the same type. In this example, you have to manually map the Value field to the Amount field.
- Fields with different types can't be mapped.
- Recipe fields that are not in the appended data are added to the appended rows and populated with nulls. In this example, the Lead Source field will be added to the appended rows.
  - Note: If null measure handling in datasets isn't enabled for your org, measure fields are populated with zeros when they're added to appended rows.

Follow these steps to append data in a recipe.

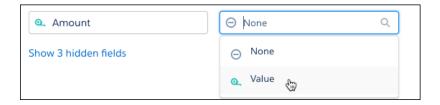
- 1. On the dataset recipe page, click the Append Data button ( ).
- 2. Select either the Published or Replicated tab, and click the dataset that you want to add. In our example, you would select the Opportunity dataset from the CanadaOrg connection.



**3.** On the map fields dialog, review how Analytics has mapped the recipe fields in the first column to fields from the data to append in the second column. Remember, fields with the same name and type are mapped automatically.

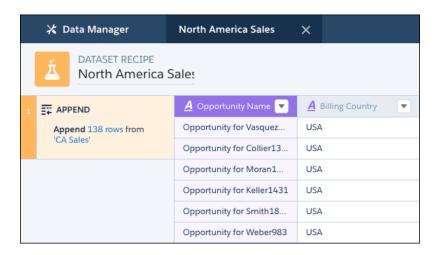


- Note: By default, hidden fields in your recipe aren't mapped. To map hidden fields, click the **Show hidden fields** link and accept or change the mappings.
- **4.** To change a field mapping, click the field in the FIELD TO APPEND column, and select a field. You can only select from fields of the same type as the recipe field that you're mapping to.
  - In our example, you don't have a field to map to the Lead Source field, so you leave that as it is. The Amount field has not been mapped because the corresponding field in the Canada data was named Value. So you map the Value field to the Amount field.



- 5. When you finish mapping fields, click Continue.
- **6.** On the confirmation message, click **Append**.
  - Note: Rows that you append in a recipe do not appear in the recipe preview, but are added to the target dataset when you run the recipe.

When you append data, a new step is created in your recipe.



When you run the recipe, the rows are appended in the target dataset.

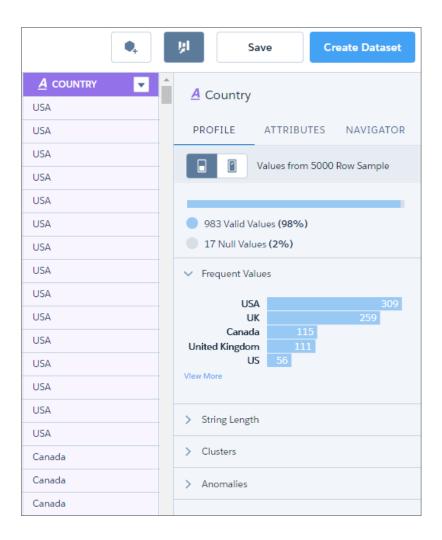
| Opportunity Name           | Billing Country | Currency | Lead Source   | Amount    | Stage                |
|----------------------------|-----------------|----------|---------------|-----------|----------------------|
| Opportunity for Morton591  | USA             | USD      | Word of mouth | 1,741,100 | Proposal/Price Quote |
| Opportunity for Butler582  | USA             | USD      | Partner       | 224,800   | Prospecting          |
| Opportunity for Frazier644 | Canada          | CAD      | -             | 1,528,750 | Qualification        |
| Opportunity for Weber1078  | Canada          | CAD      | -             | 36,960    | Value Proposition    |

Here, the Lead Source field has been added to the Canada rows and populated with null values. The Value values from the Canada rows now appear in the Amount column.

Clean and Prepare Data Intelligently with Column Profiles and Smart Suggestions

The column profile gives you key insights into the quality of your data and suggests additional transformations to help you clean and prepare it. This profile is especially useful when you are combining data from different sources, where inconsistencies are often introduced.

Let's look at an example of how you can use the profile to review the quality of data in a set of leads. Select the column you want to analyze and click . The column profile opens on the right of the recipe.



Note: The sections that you see in the profile depend on the type of column.

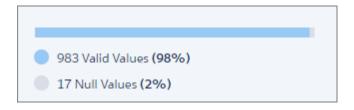
Here are the sections that you see in the column profile.

# Sample Size



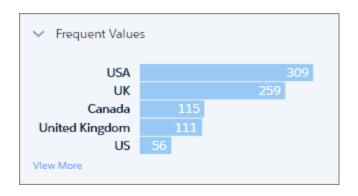
This section shows the number of rows in the sample. By default, the profile includes just the rows in your recipe preview. To use a larger sample, click

## **Valid Values**



This section gives you an idea of how the column is populated. A high proportion of null values can indicate lower quality data of limited usefulness in lenses and dashboards.

# **Frequent Values**



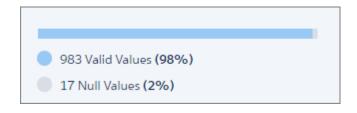
This section shows the count for each of the top five values in the column. To see the count for all values in the sample, click **View More**. This information gives you a quick insight into the variation in your data.

This example shows different values for the same country, which can impact grouping and filtering in a lens or dashboard.

For dimension and date columns, click one or more bars to see suggested transformations for those values in the Suggestions bar. In this example, if you select the US value, Analytics suggests replacing it or filtering it out.



## String Length (Dimension Columns Only)

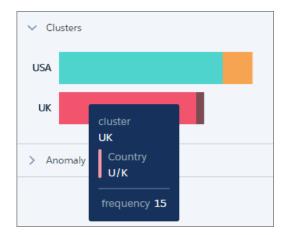


This section gives you a breakdown of the number of characters in dimension values. A wider variation than expected can indicate inconsistency issues with data from mixed sources.

## **Clusters (Dimension Columns Only)**

Clusters are groupings of similar values presented as a stacked bar. To see which value a segment represents, hover over it.

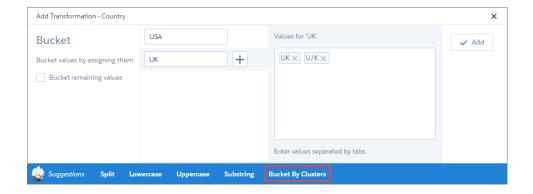
In this example, Analytics has found instances of "USA" and "US", and "UK" and "U/K" in the Country column.



These values might be genuinely different, but they could also indicate inconsistencies in data from different sources, or simply typos.

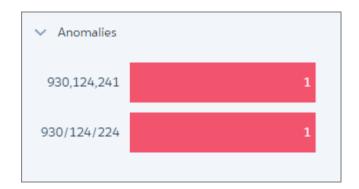
Note: Clustering works best with English language values. Values in other languages can produce unexpected results.

To help you with your data cleansing, Analytics suggests the Bucket By Cluster transformation whenever it identifies clusters. This transformation works just like regular bucketing, but gets you started by suggesting the buckets and values.



You can add the transformation as is, or add more buckets and values.

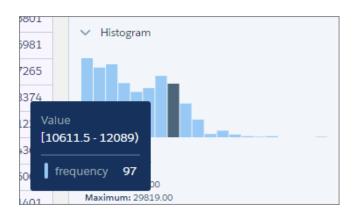
# **Anomalies (Dimension Columns Only)**



This section displays values that are not consistent with other values in the column. In this example, Analytics has identified two values in a reference column that in which most values are in the format 123-456-789.

Again, to help you clean your data, Analytics suggests transformations when you click one or more bars. For example, you can replace the values or filter them out.

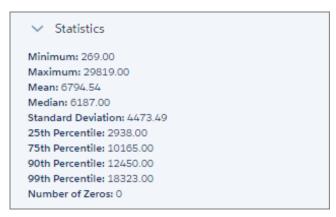
# Histogram (Measure and Date Columns Only)



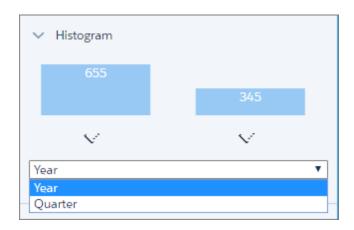
The histogram shows the distribution of values in a measure or date column. Each bar represents a predefined range, and the bar height shows the frequency of values falling within that range. Hover over a bar to see the range and frequency of the values it represents.

Use the histogram to see if the data falls within expected ranges. Low-frequency outlying values could indicate data inconsistencies or data that could impact aggregate calculations.

Measure columns also display statistical information that you can use in your data preparation.



With date columns, you can select the time frame for grouping values by year or by guarter.



# Add a Filter in a Dataset Recipe

Filter data in a dataset recipe to remove rows that you don't need in your target dataset.

To add a filter to a dataset recipe, follow these steps.

1. On the column header of the field you want to filter by, click , and then select **Filter**. Filter settings appear in the Add Transformation panel below the preview data.

# **EDITIONS**

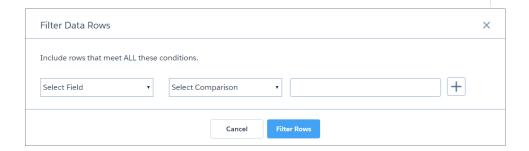
Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To create a recipe:

 Edit Analytics Dataflows OR Edit Dataset Recipes



- 2. In the first field, confirm the field to filter by, or click to select a different field from the list. You can select from any field in the recipe, even if it has been hidden.
- 3. In the second field, confirm the operator, or click to select a different one from the list.
- **4.** In the third field, enter the filter value.
  - Note: Filters in dataset recipes are case-sensitive.
- 5. To enter another condition, click + and repeat steps 2–4.
- **6.** When you have added all your conditions, click **Add**. The filter appears as a step in the left pane of the recipe.



**Ø** 

Note: Filters in dataset recipes only filter rows that meet all conditions.

Bucket a Measure Field in a Dataset Recipe

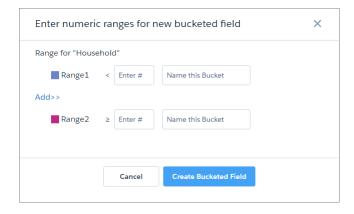
Add a field to a dataset recipe to bucket values in a specified measure field.

A bucket field lets you create new values based on existing values in another field. For example, use a bucket field to categorize households as small, medium, or large, based on the number of people in the household.

| No. of People in Household | Size Category |
|----------------------------|---------------|
| 1–2                        | Small         |
| 3–5                        | Medium        |
| 6 or more                  | Large         |

1. On the column header of the measure field you want to bucket, click , and then select **Bucket**.

Bucket settings appear in the Add Transformation panel below the preview data.



# EDITIONS

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To create a recipe:

 Edit Analytics Dataflows OR Edit Dataset Recipes

2. For Range1, enter a value and name for the first bucket. Rows with values below the Range1 value are assigned this bucket name. In this example, rows with values less than 3 are assigned a value of Small in the new bucket field.



The Range2 value populates with the value you enter for Range1.

- 3. If your bucket field has more than two buckets, click **Add>>** to add another range.
- **4.** For each additional range you add, enter the range of values and the bucket name. Rows with values greater than or equal to the first value, and less than the second value are assigned the bucket name. In this example, rows with values 3, 4, or 5 are assigned a value of Medium in the new bucket field.



- 5. Repeat steps 4–5 to add any additional buckets that you need.
- **6.** For the final range, enter a value and bucket name. Rows with values greater than or equal to this value are assigned this bucket name. In this example, rows with values greater than or equal to 6 are assigned a value of Large in the new bucket field.



**7.** When you have completed all the ranges, click **Add**. The new bucket field appears next to the source field in the recipe preview.



1 Tip: You can use a bucket field to filter rows in a recipe.

Bucket a Dimension Field in a Dataset Recipe

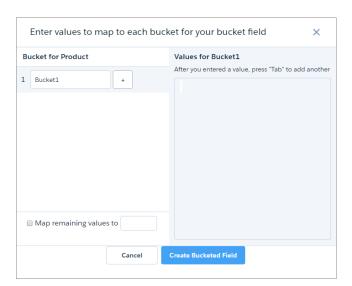
Add a field to a dataset recipe to bucket values in a specified dimension field.

A bucket field lets you create new values based on existing values in another field. For example, use a bucket field to categorize products in support cases according to their type.

| Product                                     | Product Category |
|---|------------------|
| HVAC Ctrl, HeatWave, Home A/C               | HVAC             |
| Humidity Ctrl, Humidity Unit, Home Humidity | Humidity         |
| Compressor, Condenser, Thermostat           | Parts            |

1. On the column header of the dimension field you want to bucket, click , and then select **Bucket**.

Bucket settings appear in the Add Transformation panel below the preview data.



# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# USER PERMISSIONS

To create a recipe:

 Edit Analytics Dataflows OR Edit Dataset Recipes

- 2. In the Bucket1 field, enter a name for the first bucket.
- 3. In the Values for...box, enter the values to be assigned to this bucket. Press Tab after each value to enter the next. In this example, rows containing HVAC Ctrl, HeatWave, or Home A/C product values are assigned a value of HVAC in the new bucket field.



- **4.** To add more buckets, click + and repeat steps 2–3.
- **5.** To bucket remaining values that you have not bucketed, select **Bucket remaining values** and enter a bucket for these values. If you don't select this option, rows with unbucketed values keep the same value in the new bucket field.

**6.** When you have completed all the buckets, click **Add**. The new bucket field appears next to the source field in the recipe preview.



1

Tip: You can use a bucket field to filter rows in a recipe.

Bucket a Date Field in a Dataset Recipe

Add a field to a dataset recipe to bucket values in a specified date field.

A bucket field lets you create new values based on existing values in another field. For example, use a bucket field to categorize support cases according to the season they were opened.

On the column header of the date field you want to bucket, click , and then select **Bucket**. Bucket settings appear in the Add Transformation panel below the preview data. The default mode is Absolute, which lets you specify a date range and name for each bucket.

# **EDITIONS**

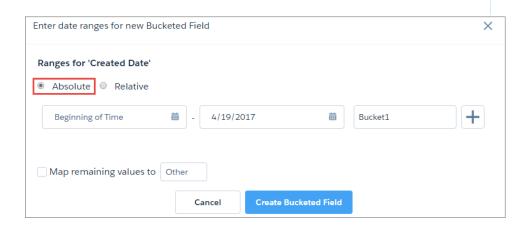
Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To create a recipe:

 Edit Analytics Dataflows OR Edit Dataset Recipes

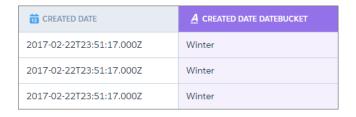


2. Enter a start date and end date for Bucket1, and enter a name for the bucket.

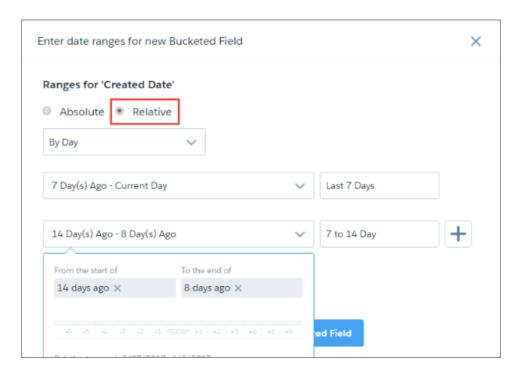
In this example, you want each bucket to be a season, so you enter the date range for winter and enter the bucket name.



- **3.** To add more buckets, click + and repeat step 2.
- **4.** To bucket remaining values that you have not bucketed, select **Bucket remaining values** and enter a bucket for these values. If you don't select this option, rows with unbucketed values keep the same value in the new bucket field.
- **5.** When you have completed all the buckets, click **Add**. The new bucket field appears next to the source field in the recipe preview.



In Relative mode, each bucket is a period of time relative to the date that the recipe runs. You can create bucket periods based on days, weeks, months, quarters, or even years. For example, create a bucket field from the case created date to categorize cases by when they were opened.



When you create a relative date bucket field, manually enter the start and end of each period, or use the sliders.

1 Tip: You can use a bucket field to filter rows in a recipe.

Add a Formula Field in a Dataset Recipe

Add a formula field to calculate new values from measures in your recipe, using arithmetic operators and math functions.

A formula field lets you calculate new values based on existing values in measure fields. To help you, a formula builder suggests fields and functions as you type.

- 1. To start creating a formula field, choose one of these methods.
  - To create the formula from scratch, click on any measure field column header, and then select **Formula**.

The formula builder appears in the Add Transformation panel below the recipe preview.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To create a recipe:

 Edit Analytics Dataflows OR Edit Dataset Recipes



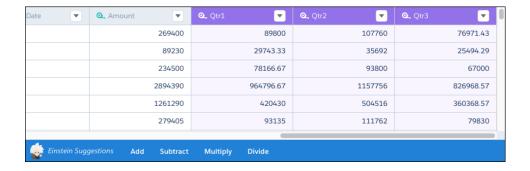
• To use a suggested function, click the measure field that you want to use in the recipe preview, and then click a function in the suggestions bar below the preview.



The formula is started for you, using the field and function that you selected.



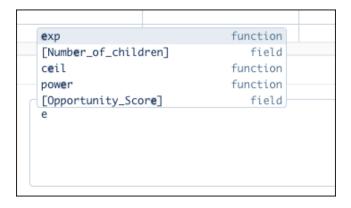
• To select multiple fields for use in your formula, while pressing Shift or Ctrl (Cmd on Mac), click the measure fields that you want to use in the recipe preview. Then click an operator in the suggestions bar below the preview.



The formula is started for you, using the fields and operator that you selected.



- 2. In the formula builder, enter the formula. If the formula has been started for you, you can edit it here.
  - Note: Here are some tips for entering or editing your formula.
    - Just start typing to see matching math functions and measure fields.
    - To select a match, either click it, or use your cursor up and down keys to select it and then press Enter or Tab.
    - Use your keyboard to enter parentheses, arithmetic operators, and numbers as needed.



**3.** When you have completed the formula, click **Add**. The new formula field appears in the recipe preview.



1 Tip: You can bucket a formula field or reference it in other formulas in the recipe.

You can use the following math functions in a formula field. The arguments in each function can be either literal values or measure fields.

| Function | Description   | Format                          |  |
|----------|---|---------------------------------|--|
| abs      | Calculates the absolute value of a number.<br>The absolute value of a number is the<br>number without its positive or negative<br>sign. | abs(number)                     |  |
| ceil     | Rounds a number up to the nearest integer.  | ceil(number)                    |  |
| ехр      | Returns a value for e raised to the power of a number you specify.  | exp(number)                     |  |
| floor    | Returns a number rounded down to the nearest integer.   | floor(number)                   |  |
| log      | Returns the logarithm of a number in the base you specify.  | log(base, number)               |  |
| power    | Raises a number to a power of a specified number.   | power(number, power)            |  |
| round    | Returns the nearest number to a number you specify, constraining the new number by a specified number of digits.                        | round(number, number of digits) |  |
| sqrt     | Returns the positive square root of a given number.   | sqrt (number)                   |  |
| trunc    | Truncates a number to an integer.   | trunc(number)                   |  |

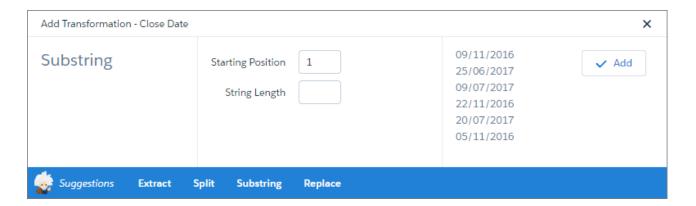
### Transform Fields in a Dataset Recipe

Data is not always consistent, especially when you combine data from different sources. In a dataset recipe, you can transform fields to ensure that values are consistent in your target dataset. Change case, split values to get just the parts you need, and replace incorrect values.

When you transform a field, a new field is added with the new values to the right of the original field. You can choose to keep or remove the original field.

To transform a field, click in the column header (1), and then click the transformation that you want to use. Alternatively, select a transformation from the Suggestions bar at the bottom of the recipe.

Transformation settings appear in the Add Transformation panel below the preview data.



These are the field transforms you can apply.

| Transform | Description   | Example   |  |
|-----------|---|---|--|
| Trim      | Remove leading and trailing whitespaces.  | Remove whitespaces to ensure values from one source are consistent with values from another source.  " CA " becomes "CA".                                 |  |
| Uppercase | Convert values in selected field to uppercase.  | Correct US state values.  ca becomes CA.  |  |
| Lowercase | Convert values in selected field to lowercase.  | Correct lead email addresses captured at a trade show.  JSMITH@FORRESTER.COM becomes  jsmith@forrester.com.   |  |
| Split     | Divide values into multiple parts at<br>the delimiter and create a new field<br>for each part.                            | Divide phone numbers into area code and number.  Select the - delimiter to split 925-900 2123 into two new values 925 and 900 2123.                       |  |
| Substring | Starting at the character <b>Position</b> in a value, extract the number of characters in <b>Length</b> into a new field. | Extract the month from date values.  Enter a <b>Position</b> of 4 and a <b>Length</b> of 2 to extract the month value 10 from the month value 2016–10–23. |  |

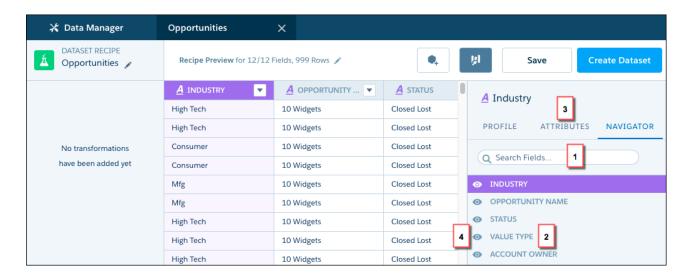
| Transform | Description   | Example  |
|-----------|---|--|
| Replace   | Find a specific value in a field and replace it with a new value. A new field is created containing both replaced and unchanged values. | Make country values consistent.  Find all instances of US and Replace them with USA.   |
| Dim2Mea   | Convert values in a dimension field to numerical values in a new measure field.   | You use the Extract Date Component to extract the hour from the case created date. Use the Convert Dimension to Measure transformation to make the hour a measure for use in calculations. |
| Extract   | Extract the selected component from a date field into a new field.  | Extract the hour component from the case created date to analyze case creation by hour of the day.   |

(1) Important: Analytics datasets contain date and time component fields, such as Year, Quarter, and Month, that are derived automatically from existing date and time fields. Transformations on these component fields are not supported.

### Navigate Fields in a Dataset Recipe

As you add data and transform fields, the number of fields in your recipe preview increases. This makes it harder to find the fields that you want to work with. Use the field navigator to guickly find the fields that you need, and hide the ones you don't.

To open the field navigator in a recipe, click the column profile button ( ), and click the **Navigator** tab.



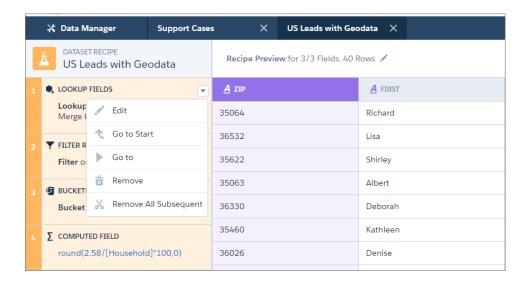
To quickly find a field, start typing its name in the Search Fields box (1) to narrow down the list of fields. When you see the field that you want, click it (2) to see it highlighted in the recipe preview. To view or edit the field's metadata, click **Attributes** (3). Here you can edit the API names and labels of new fields you create in a recipe, and the labels of existing fields. If you decide you don't need to see the field, click the eye (4) to hide it. Click the eye again to show a field. You can also hide a field by hovering over its header in the preview, and clicking the eye.

**Note:** If you hide a field in the navigator, by default it is not included when the recipe runs. However, you can choose to include the field when you run the recipe.

# Navigate and Edit Recipe Steps

As you prepare your data, each change you make appears as a recipe step on the left. Think of these steps as your recipe history. You can move back and forward through this history to see how the data looks at different stages of the recipe. If you don't like what you see, you can edit or remove any step.

To access recipe step actions, hover over the step and click .

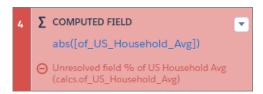


Note: The actions available for each step depend on the step's position.

Here's what the actions do.

| Action                   | Description  |
|--------------------------|--|
| Edit                     | Edit the current step.   |
|                          | 1 Tip: You can also edit a step by clicking any of the blue values.  |
| Go to Start              | Display the preview data as it was at the start of the recipe, before you added any steps. This action is only available for the first step. |
| Go to                    | Display the preview data as it was at the current step, before you added any subsequent steps.   |
| Remove                   | Remove the current step.   |
| Remove all<br>Subsequent | Remove all steps after the current step.   |

Note: Removing a step may cause subsequent steps to stop working. For example, if you remove a formula field step that is used in a later formula field, Analytics can't calculate the second formula. When this happens, the affected step appears in red, with an explanation of the error, alerting you to the need to edit the step.



### Save a Dataset Recipe

If you're not ready to create the target dataset, save the recipe and come back to it later. Saving simply saves your steps without you having to create the dataset.

To save a recipe, click **Save**.



You have two options when saving a recipe.

### **Save Recipe**

Save the recipe with its current name. The recipe does not run. Use this option to save your progress.

### Save As New...

Save a copy of your recipe with a new name. The copy opens in a new tab in the data manager. Use this option to try out different transformations in a recipe, without changing your original recipe.

Open a saved recipe on the Dataflows & Recipes tab of the data manager to update it or run it. See Manage Dataset Recipes.

### Run a Dataset Recipe

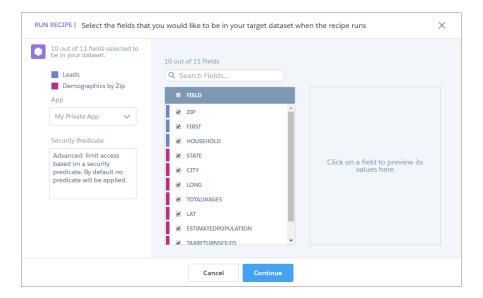
Run a new recipe to create a target dataset, or run an existing recipe to update a target dataset.

When you run a recipe, you select an app for the target dataset, enter a security predicate if necessary, and select the fields to include in your target dataset. You can run a recipe once only, or set it to run on a schedule

To run a recipe from the recipe itself, follow these steps.

On the dataset recipe page, click Create Dataset or Update Dataset. The Update Dataset option appears if the dataset has been run before.
 The Run Recipe dialog appears.





2. In the **Dataset Name** field, enter a name for the target dataset.

The dataset name defaults to the name of the recipe.

- **3.** From the **App** picklist, select where you want to create the target dataset.
- **4.** If necessary, enter a security predicate for the target dataset. See Row-Level Security for Datasets.
- **5.** In the list of fields, make sure the fields that you require are selected.
  - Note: By default, fields that you have removed or hidden in the recipe preview are not selected. Make sure that you review these fields.

### 6. Click Continue.

**7.** Either select to run periodically, or this time only.

If you select to run this time only, click **Run Recipe** to finish.

If you select to run periodically, click **Schedule Recipe**, complete the schedule settings, and then click **Schedule and Run**.

Your recipe is queued to run.

- Note: Users with the Edit Dataset Recipes permission can:
  - Create a recipe only in their private app.
  - Run and schedule recipes based on datasets that don't have security predicates.

You can also run a recipe from the Dataset Recipes list on the Dataflows & Recipes tab of the data manger. Click the actions button on the right of the recipe and select **Run Last Updated**.





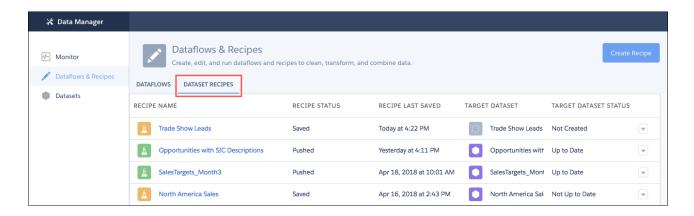
**Note**: When you run a recipe from the actions menu, you are running the last updated version of the recipe. Recipes that you've edited and saved must be updated before you can run them here. If you've never run a recipe, the run option isn't available in the actions menu.

# Manage Dataset Recipes

View the status of your recipes and target datasets on the Dataflows & Recipes tab of the data manager. You can also edit, run, schedule, and delete recipes here.

To open the data manager in Analytics, click the gear icon ( and then click **Data Manager**.

Click the **Dataflows & Recipes** tab, and then click the **DATASET RECIPES** subtab. This subtab displays your recipes and their associated target datasets.



A recipe's icon and status indicate its current state.

| Icon | Status | Explanation  |
|------|--------|--|
| Á    | Pushed | New or updated recipe that has been run.               |
| Á    | Saved  | New or updated recipe that has been saved but not run. |

A target dataset's icon and status indicate its current state.

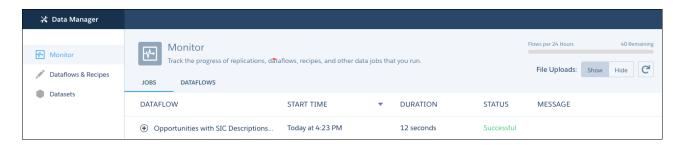
| Icon | Status         | Explanation  |
|------|----------------|--|
|      | Up to Date     | The dataset has been created and is up-to-date.  |
|      | Not Up to Date | The dataset has been created, but is not currently up-to-date. This is because its recipe has been updated but not run, or is queued to run. |
|      | Not Created    | The dataset has not been created. This is because its recipe has been created but never run, or is queued to be run.                         |

To edit, run, schedule, or delete a recipe, click the actions button on the right of the recipe and select an option.



- Note: When you run or schedule a recipe here, you are doing it for the last updated version of the recipe. Recipes that you've edited and saved must be updated before you can run or schedule them here. If you've never run a recipe, the run and schedule options aren't available in the actions menu.
- Note: Deleting a recipe does not delete its target dataset.

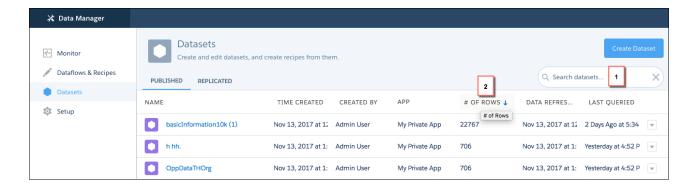
To view the progress of recipes that you have run, click the **Monitor** tab. Recipes appear as separate jobs on the JOBS subtab.



# Manage Datasets

Edit a dataset to update its details or extended metadata, apply security, replace data, or restore it to a previous version.

You can manage your datasets on the Datasets tab of the data manager.



Use the search box (1) to find datasets. Click a column header (2) to sort by that column. If you have the Manage Analytics permission, datasets in users' private apps are visible here.

### IN THIS SECTION:

#### Edit a Dataset

Edit a dataset to change its name, app, security, or extended metadata (XMD). You can also replace data in a dataset, restore it to a previous version, or delete it. The dataset edit page also provides key information about when the dataset was created and last updated, and where it is used.

### Row-Level Security for Datasets

If an Analytics user has access to a dataset, the user has access to all records in the dataset by default. However, you can implement row-level security on a dataset to restrict access to records. Some records contain sensitive data that must not be accessible by everyone.

# Predicate Expression Syntax for Datasets

You must use valid syntax when defining the predicate expression.

# Customize the Display of Dataset Fields and Values

Choose what shows up in lenses and dashboards. Rename and hide dataset fields. Set the default columns that appear in tables. Set the labels and default colors for dimension values.

#### Delete a Dataset

Delete unnecessary datasets from your My Private App or in shared apps on which you have at least Editor access. Removing datasets reduces clutter and helps you avoid reaching your org's limit for rows across registered datasets.

# Edit a Dataset

LISER PERMISSIONS

| Use Analytics AND Editor access to the dataset's app                     |
|--|
| Use Analytics AND Editor access to the dataset's app                     |
| Use Analytics AND Editor access to the dataset's app                     |
| Upload External Data to Analytics AND Editor access to the dataset's app |
|  |

# EDITIONS

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

| To edit a dataset security: | Edit Analytics Dataflows |
|-----------------------------|--------------------------|
| To restore a dataset:       | Edit Analytics Dataflows |

Edit a dataset to change its name, app, security, or extended metadata (XMD). You can also replace data in a dataset, restore it to a previous version, or delete it. The dataset edit page also provides key information about when the dataset was created and last updated, and where it is used.

You can edit a dataset from Analytics home or from the data manager.

- To edit a dataset from Analytics home, follow these steps.
  - 1. Hover over the dataset and click .
  - 2. Click Edit.
- To edit a dataset from the data manager, follow these steps.
  - 1. In the data manager, click the **Datasets** tab.
  - 2. On the right of the dataset, click .
  - 3. Click Edit Dataset.
- Edit the following settings, as needed.

| Option                 | Description   |  |
|------------------------|---|--|
| Dataset name           | Enter a new name if you'd like to change the name of the dataset. The name cannot exceed 80 characters.   |  |
| Арр                    | Select a new app if you'd like to move the dataset to a different app.  |  |
| Extended Metadata File | Specify an extended metadata file if you'd like to customize the formatting of dashboards associated with the dataset.  |  |
|                        | Refer to Extended Metadata (XMD) Reference for information about extended metadata files.   |  |
| Sharing Source         | If you have enabled sharing inheritance, specify the object from which you want to inherit sharing for this dataset. You can't specify a sharing source for datasets created from CSV files. When you select a sharing source, you must also add a security predicate. Analytics populates the Security Predicate field with the value false. |  |
|                        | See Salesforce Sharing Inheritance for Datasets.  |  |
| Security Predicate     | Add a security predicate if you'd like to apply row-level security on the dataset.  For information about predicates, see Row-Level Security for Datasets.  |  |
|                        |   |  |

### IN THIS SECTION:

#### Update a Dataset's Extended Metadata

A dataset's extended metadata (XMD) file allows you to customize the formatting of dashboards associated with the dataset. You can update the XMD file through the dataset's edit page.

#### Restore a Dataset to a Previous Version

Restoring a dataset rolls back its data to a previous version. Restore a dataset to reverse a recent update or to undo the results of a dataflow change.

## Update a Dataset's Extended Metadata

A dataset's extended metadata (XMD) file allows you to customize the formatting of dashboards associated with the dataset. You can update the XMD file through the dataset's edit page.

- (1) Important: An XMD file must use XMD 2.0 syntax and be no greater than 5 MB. Refer to Extended Metadata (XMD) Reference for information about extended metadata files and XMD 2.0 syntax.
- 1. On the Analytics page, click the **Datasets** tab. If you're in the data manager, click the **Datasets** tab there.
- 2. Hover over the dataset that you want to update, click , and then click Edit. If you're in the data manager, click Edit Dataset.

  The dataset edit page opens.
- 3. Under Extended Metadata File, click , and then select **Download**. Download the current XMD file as a backup.
- 4. Under Extended Metadata File, click , and then select Replace. Select your new XMD file and click Open.
  If the XMD file is not valid, you see an error message. Correct the syntax of the file and upload it again.
- Note: If the XMD file displays an error message when you open the dataset edit page, the current file is not valid.



Perform step 3 to download the file, then convert it to XMD 2.0. Then perform step 4 to reupload the converted file and update the dataset.

Refer to Extended Metadata (XMD) Reference for information about converting extended metadata files to XMD 2.0 syntax.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To update a dataset's extended metadata:

 Use Analytics AND Editor access to the dataset's app

### Restore a Dataset to a Previous Version

Restoring a dataset rolls back its data to a previous version. Restore a dataset to reverse a recent update or to undo the results of a dataflow change.

- (1) Important: Restoring a dataset can impact the dashboards, lenses, and dataflows that use it. Refer to the usage information on the dataset's edit page to review the impacted assets before you restore.
- 1. On the Analytics page, click the **Datasets** tab. If you're in the data manager, click the **Datasets** tab there.
- 2. Hover over the dataset that you want to restore, click , and then click **Edit**. If you're in the data manager, click **Edit Dataset**.

The dataset edit page opens. If there are previous versions of the dataset, the Restore Dataset button appears at the bottom of the page.

#### 3. Click Restore Dataset.

The Restore Dataset dialog appears, displaying the two previous versions.

- **4.** Click the version you want to restore.
  - Note: To see older versions, click the **Show Older Versions** link. You can select older versions to restore, but Analytics can't always restore them.

#### 5. Click Restore.

The restore confirmation dialog appears.

#### 6. Click Restore.

The dataset is queued to be restored.

**7.** To view the restore data job, click the **data monitor** link.

You see the restore data job on the Monitor tab of the data manager. If Analytics can't restore the dataset, the job fails. Try restoring a later version of the dataset.

(1) Important: Restoring a dataset has no effect on associated dataflows or recipes. It's possible that when an associated dataflow or recipe next runs, it can undo the results of a restore.

# Row-Level Security for Datasets

If an Analytics user has access to a dataset, the user has access to all records in the dataset by default. However, you can implement row-level security on a dataset to restrict access to records. Some records contain sensitive data that must not be accessible by everyone.

To implement row-level security for a dataset, either define a security predicate or turn on sharing inheritance. Specify from which objects to migrate the sharing rules. Sharing inheritance works together with security predicates. You can specify a security predicate to take over for those users who fall outside the scope of sharing inheritance.

# IN THIS SECTION:

## Security Predicates for Datasets

Applying a predicate to a dataset is more than just defining the predicate expression. You also need to consider how the predicate is dependent on the information in the dataset and where to define the predicate expression.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To restore a dataset:

Manage Analytics

### Salesforce Sharing Inheritance for Datasets

Use sharing inheritance to allow Analytics to use the same sharing rules for your datasets as Salesforce uses for your objects.

SEE ALSO:

sfdcRegister Transformation sfdcRegister Parameters

# **Security Predicates for Datasets**

Applying a predicate to a dataset is more than just defining the predicate expression. You also need to consider how the predicate is dependent on the information in the dataset and where to define the predicate expression.

Define a predicate for each dataset on which you want to restrict access to records. A *predicate* is a filter condition that defines row-level access to records in a dataset.

When a user submits a query against a dataset that has a predicate, Analytics checks the predicate to determine which records the user has access to. If the user doesn't have access to a record, Analytics does not return that record.



#### Note:

- Changes to security settings (rowLevelSharingSource or rowLevelSecurityFilter) in a dataflow have no effect on datasets that already exist. You must change those settings on the edit dataset page.
- When sharing inheritance is enabled, you can set the security predicate to 'false' to block all users not covered by sharing. In fact, this predicate is the default when sharing is enabled on existing datasets.

The predicate is flexible and can model different types of security policies. For example, you can create predicates based on:

- Record ownership. Enables each user to view only records that they own.
- Management visibility. Enables each user to view records owned or shared by their subordinates based on a role hierarchy.
- Team or account collaboration. Enables all members of a team, like an opportunity team, to view records shared with the team.
- Combination of different security requirements. For example, you might need to define a predicate based on the Salesforce role hierarchy, teams, and record ownership.

The type of security policy you implement depends on how you want to restrict access to records in the dataset.



Warning: If row-level security isn't applied to a dataset, any user that has access to the dataset can view all records in the dataset.

You can create a predicate expression based on information in the dataset. For example, to enable each user to view only dataset records that they own, you can create a predicate based on a dataset column that contains the owner for each record. If needed, you can load additional data into a dataset required by the predicate.

The location where you define the predicate varies.

- To apply a predicate on a dataset created from a dataflow, add the predicate in the **rowLevelSecurityFilter** field of the Register transformation. The next time the dataflow runs, Analytics will apply the predicate.
- To apply a predicate on a dataset created from an external data file, define the predicate in the **rowLevelSecurityFilter** field in the metadata file associated with the external data file. Analytics applies the predicate when you upload the metadata file and external data file. If you already created the dataset from a external data file, you can edit the dataset to apply or change the predicate.

#### IN THIS SECTION:

### Row-Level Security Example based on Record Ownership

Let's look at an example where you create a dataset based on a CSV file and then implement row-level security based on record ownership. In this example, you will create a dataset that contains sales targets for account owners. To restrict access on each record in the dataset, you will create a security policy where each user can view only sales targets for accounts that they own. This process requires multiple steps that are described in the sections that follow.

#### Row-Level Security Example based on Opportunity Teams

Let's look at an example where you create a dataset based on Salesforce data and then implement row-level security based on an opportunity team. In this example, you will create a dataset that contains only opportunities associated with an opportunity team. To restrict access on each record in the dataset, you will create a security policy where only opportunity members can view their opportunity. This process requires multiple steps that are described in the sections that follow.

# Row-Level Security Example based on Role Hierarchy and Record Ownership

Let's look at an example where you create a dataset based on Salesforce data and then implement row-level security based on the Salesforce role hierarchy and record ownership. In this example, you will create a dataset that contains all opportunities. To restrict access on each record in the dataset, you will create a security policy where each user can view only opportunities that they own or that are owned by their subordinates based on the Salesforce role hierarchy. This process requires multiple steps that are described in the sections that follow.

# Row-Level Security Example based on Record Ownership

Let's look at an example where you create a dataset based on a CSV file and then implement row-level security based on record ownership. In this example, you will create a dataset that contains sales targets for account owners. To restrict access on each record in the dataset, you will create a security policy where each user can view only sales targets for accounts that they own. This process requires multiple steps that are described in the sections that follow.



**Note**: Although this example is about applying a predicate to a dataset created from a CSV file, this procedure can also be applied to a dataset that is created from Salesforce data.

### IN THIS SECTION:

### 1. Determine Which Data to Include in the Dataset

First, determine what data you want to include in the dataset. For this example, you will create a Targets dataset that contains all sales targets.

# 2. Determine Row-Level Security for Dataset

Now it's time to think about row-level security. How will you restrict access to each record in this dataset?

#### 3. Add the Predicate to the Metadata File

For a dataset created from a CSV file, you can specify the predicate in the metadata file associated with the CSV file or when you edit the dataset.

#### 4. Create the Dataset

Now that you updated the metadata file with the predicate, you can create the dataset.

## 5. Test Row-Level Security for the Dataset

You must verify that the predicate is applied properly and that each user can see their own sales targets.

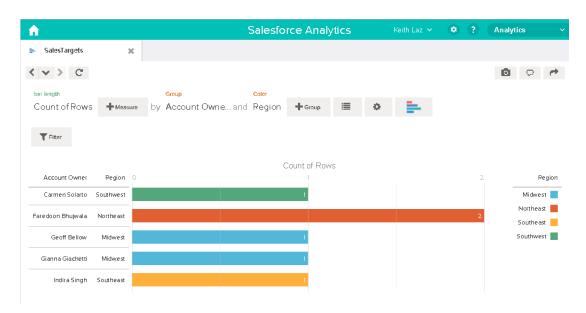
### Determine Which Data to Include in the Dataset

First, determine what data you want to include in the dataset. For this example, you will create a Targets dataset that contains all sales targets.

You will obtain sales targets from the CSV file shown below.

| AccountOwner | Region    | Target | TargetDate |
|--------------|-----------|--------|------------|
| Tony Santos  | Midwest   | 10000  | 1/1/2011   |
| Lucy Timmer  | Northeast | 50000  | 1/1/2011   |
| Lucy Timmer  | Northeast | 0      | 12/1/2013  |
| Bill Rolley  | Midwest   | 15000  | 1/1/2011   |
| Keith Laz    | Southwest | 35000  | 1/1/2011   |
| Lucy Timmer  | Southeast | 40000  | 1/1/2011   |

If you were to create the dataset without implementing row-level security, any user that had access to the dataset would be able to see the sales targets for all account owners. For example, as shown below, Keith would be able to view the sales targets for all account owners.



You need to apply row-level security to restrict access to records in this dataset.

## **Determine Row-Level Security for Dataset**

Now it's time to think about row-level security. How will you restrict access to each record in this dataset?

You decide to implement the following predicate on the dataset.

'AccountOwner' == "\$User.Name"



**Note:** All predicate examples in this document escape the double quotes because it's required when you enter the predicate in the Register transformation or metadata file. This predicate implements row-level security based on record ownership. Based on the predicate, Analytics returns a sales target record when the user who submits the query on the dataset is the account owner.

Let's take a deeper look into the predicate expression:

- AccountOwner refers to the dataset column that stores the full name of the account owner for each sales target.
- \$User.Name refers to the Name column of the User object that stores the full name of each user. Analytics performs a lookup to get the full name of the user who submits each query.



Note: The lookup returns a match when the names in AccountOwner and \$User.Name match exactly—they must have the same case

#### Add the Predicate to the Metadata File

For a dataset created from a CSV file, you can specify the predicate in the metadata file associated with the CSV file or when you edit the dataset.

You must escape the double quotes around string values when entering a predicate in the metadata file.

In this example, you add the predicate to the metadata file shown below.

```
{
   "fileFormat": {
   "charsetName": "UTF-8",
   "fieldsDelimitedBy": ",",
   "fieldsEnclosedBy": "\"",
   "numberOfLinesToIgnore": 1 },
   "objects": [
      {
         "name": "Targets",
         "fullyQualifiedName": "Targets",
         "label": "Targets",
         "rowLevelSecurityFilter": "'AccountOwner' == \"$User.Name\"",
         "fields": [
         "name": "AccountOwner",
         "fullyQualifiedName": "Targets.AccountOwner",
         "label": "Account Owner",
         "type": "Text"
      },
      {
         "name": "Region",
         "fullyQualifiedName": "Targets.Region",
         "label": "Region",
         "type": "Text"
      },
      {
         "name": "Target",
         "fullyQualifiedName": "Targets.Target",
         "label": "Target",
         "type": "Numeric",
         "precision": 16,
         "scale": 0,
         "defaultValue": "0",
         "format": null
      },
         "name": "TargetDate",
         "fullyQualifiedName": "Targets.TargetDate",
         "label": "TargetDate",
```

```
"description": "",
    "type": "Date",
    "format": "dd/MM/yy HH:mm:ss",
    "isSystemField": false,
    "fiscalMonthOffset": 0
}

]
}
```

### **Create the Dataset**

Now that you updated the metadata file with the predicate, you can create the dataset.



**Warning:** If you wish to perform the steps in this sample implementation, perform the steps in a non-production environment. Ensure that these changes do not impact other datasets that you already created.

To create the dataset, perform the following steps.

- 1. In Analytics, go to the home page.
- 2. Click Create > Dataset
- 3. Click CSV.

The following screen appears.

# **EDITIONS**

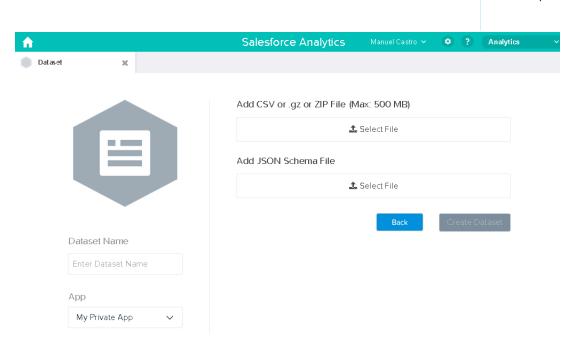
Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To upload a CSV and metadata file:

 Upload External Data to Analytics



- 4. Select the CSV file and metadata (schema) file.
- **5.** In the **Dataset Name** field, enter "SalesTarget" as the name of the dataset.
- **6.** Optionally, choose a different app where you want to store the dataset.

#### 7. Click Create Dataset.

Analytics confirms that the upload is successful and then creates a job to create the dataset. You can view the SalesTarget dataset after the job completes successfully.

- **8.** To verify that the job completes successfully, perform the following steps:
  - a. Click the gear icon ( o) and then select **Data Monitor** to open the data monitor.

    By default, the Jobs View of the data monitor appears. It shows the statuses of dataflow and external data upload jobs.
  - **b.** Click the Refresh Jobs button ( ) to view the latest statuses of the jobs.

## **Test Row-Level Security for the Dataset**

You must verify that the predicate is applied properly and that each user can see their own sales targets.

- 1. Log in to Analytics as Keith.
- 2. Open the SalesTargets dataset.

  As shown in the following lens, notice that Keith can see only his sales target.

# EDITIONS

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.



# Row-Level Security Example based on Opportunity Teams

Let's look at an example where you create a dataset based on Salesforce data and then implement row-level security based on an opportunity team. In this example, you will create a dataset that contains only opportunities associated with an opportunity team. To restrict access on each record in the dataset, you will create a security policy where only opportunity members can view their opportunity. This process requires multiple steps that are described in the sections that follow.

### IN THIS SECTION:

### 1. Determine Which Data to Include in the Dataset

First, determine what data you want to include in the dataset. For this example, you will create an OppTeamMember dataset that contains only opportunities associated with an opportunity team.

#### 2. Design the Dataflow to Load the Data

Now it's time to figure out how the dataflow will extract the Salesforce data and load it into a dataset. You start by creating this high-level design for the dataflow.

## 3. Determine Row-Level Security for the Dataset

Now it's time to think about row-level security. How will you restrict access to each record in this dataset?

### 4. Modify the Dataflow Based on Row-Level Security

It's now time to add the predicate in the dataflow definition file.

#### 5. Create the Dataset

Now that you have the final dataflow definition file, you can create the dataset.

## 6. Test Row-Level Security for the Dataset

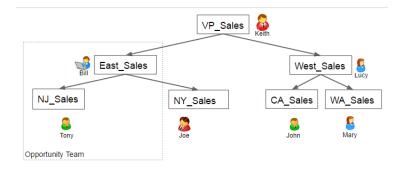
You must verify that the predicate is applied properly and that each user can see the appropriate opportunities.

#### **Determine Which Data to Include in the Dataset**

First, determine what data you want to include in the dataset. For this example, you will create an OppTeamMember dataset that contains only opportunities associated with an opportunity team.

You will obtain opportunities from the Opportunity object and the opportunity teams from the OpportunityTeamMember object. Both are Salesforce objects.

In this example, your Salesforce organization has the following opportunity team and users.

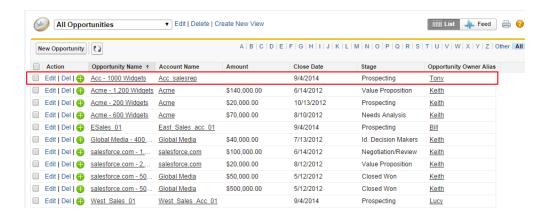


# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

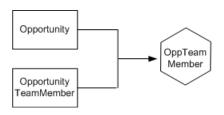
Your organization also contains the following opportunities, most of which are owned by Keith.



Acc - 1000 Widgets is the only opportunity shared by an opportunity team. Bill is the Sales Manager for this opportunity. Tony is the opportunity owner.

### Design the Dataflow to Load the Data

Now it's time to figure out how the dataflow will extract the Salesforce data and load it into a dataset. You start by creating this high-level design for the dataflow.



# **EDITIONS**

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The dataflow will extract data from the Opportunity and OpportunityTeamMember objects, join the data, and then load it into the OppTeamMember dataset.

Now let's implement that design in JSON, which is the format of the dataflow definition file. A dataflow definition file contains transformations that extract, transform, and load data into a dataset.

Based on the design, you create the JSON shown below.

```
{
  "Extract_OpportunityTeamMember": {
      "action": "sfdcDigest",
      "parameters": {
         "object": "OpportunityTeamMember",
         "fields": [
            { "name": "Name" },
            { "name": "OpportunityId" },
            { "name": "UserId" }
         ]
      }
  },
  "Extract Opportunity": {
      "action": "sfdcDigest",
      "parameters": {
         "object": "Opportunity",
```

```
"fields": [
         { "name": "Id" },
         { "name": "Name" },
         { "name": "Amount" },
         { "name": "StageName" },
         { "name": "AccountId" },
         { "name": "OwnerId" }
   }
},
"Augment OpportunityTeamMember Opportunity": {
   "action": "augment",
   "parameters": {
      "left": "Extract_OpportunityTeamMember",
      "left key": [
         "OpportunityId"
      ],
      "relationship": "TeamMember",
      "right": "Extract Opportunity",
      "right key": [
         "Id"
      ],
      "right select": [
         "Name", "Amount"
      ]
},
"Register_Dataset": {
   "action": "sfdcRegister",
   "parameters": {
      "alias": "OppTeamMember",
      "name": "OppTeamMember",
      "source": "Augment OpportunityTeamMember Opportunity",
      "rowLevelSecurityFilter": ""
   }
}
```

If you were to run this dataflow, Analytics would generate a dataset with no row-level security. As a result, any user that has access to the dataset would be able to see the opportunity shared by the opportunity team.

For example, as shown below, Lucy would be able to view the opportunity that belongs to an opportunity team of which she is not a member.



You need to apply row-level security to restrict access to records in this dataset.

### **Determine Row-Level Security for the Dataset**

Now it's time to think about row-level security. How will you restrict access to each record in this dataset?

You decide to implement the following predicate on the dataset.



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```
'UserId' == "$User.Id"
```

This predicate compares the Userld column in the dataset against the ID of the user running a query against the dataset. The Userld column in the dataset contains the user ID of the team member associated with each opportunity. To determine the ID of the user running the guery, Analytics looks up the ID of the user making the guery in the User object.

For each match, Analytics returns the record to the user.

### Modify the Dataflow Based on Row-Level Security

It's now time to add the predicate in the dataflow definition file.

# EDITIONS

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You add the predicate to the Register transformation that registers the OppTeamMember dataset as shown below.

```
"Extract OpportunityTeamMember": {
   "action": "sfdcDigest",
   "parameters": {
      "object": "OpportunityTeamMember",
      "fields": [
         { "name": "Name" },
         { "name": "OpportunityId" },
         { "name": "UserId" }
   }
},
"Extract Opportunity": {
   "action": "sfdcDigest",
   "parameters": {
      "object": "Opportunity",
      "fields": [
         { "name": "Id" },
         { "name": "Name" },
         { "name": "Amount" },
         { "name": "StageName" },
         { "name": "AccountId" },
         { "name": "OwnerId" }
   }
},
"Augment OpportunityTeamMember Opportunity": {
   "action": "augment",
   "parameters": {
      "left": "Extract_OpportunityTeamMember",
      "left key": [
         "OpportunityId"
      ],
      "relationship": "TeamMember",
      "right": "Extract Opportunity",
      "right key": [
         "Id"
      ],
      "right_select": [
         "Name", "Amount"
},
"Register Dataset": {
   "action": "sfdcRegister",
   "parameters": {
      "alias": "OppTeamMember",
      "name": "OppTeamMember",
      "source": "105_Augment_OpportunityTeamMember_Opportunity",
      "rowLevelSecurityFilter": "'UserId' == \"$User.Id\""
}
```

### **Create the Dataset**

Now that you have the final dataflow definition file, you can create the dataset.



Warning: If you wish to perform the steps in this sample implementation, verify that you have all required Salesforce objects and fields, and perform the steps in a non-production environment. Ensure that these changes do not impact other datasets that you already created. Also, always make a backup of the existing dataflow definition file before you make changes because you cannot retrieve old versions of the file.

To create the dataset, perform the following steps.

- In Analytics, click the gear icon ( ) and then select **Data Monitor** to open the data monitor.
   The Jobs view of the data monitor appears by default.
- 2. Select Dataflow View.
- **3.** Click the actions list (1) for the dataflow and then select **Download** to download the existing dataflow definition file.

# **EDITIONS**

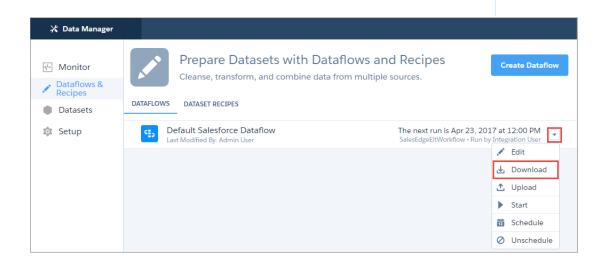
Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To download, upload, run, and monitor a dataflow:

Edit Analytics Dataflows



- **4.** Open the dataflow definition file in a JSON or text editor.
- **5.** Add the JSON determined in the previous step.
- **6.** Before you save the dataflow definition file, use a JSON validation tool to verify that the JSON is valid.

  An error occurs if you try to upload the dataflow definition file with invalid JSON. You can find JSON validation tool on the internet.
- 7. Save and close the dataflow definition file.
- 8. In the Dataflow View of the data monitor, click the actions list for the dataflow and then select Upload.
- 9. Select the updated dataflow definition file and click **Upload**.
- 10. In the Dataflow View of the data monitor, click the actions list for the dataflow and then select **Run** to run the dataflow job.
- 11. Click the **Refresh Jobs** button ( ) to view the latest status of the dataflow job. You can view the OppTeamMember dataset after the dataflow job completes successfully.



**Note**: If you are adding a predicate to a dataset that was previously created, each user must log out and log back in for the predicate to take effect.

### **Test Row-Level Security for the Dataset**

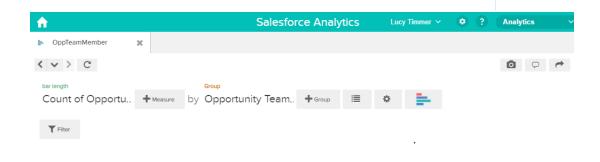
You must verify that the predicate is applied properly and that each user can see the appropriate opportunities.

- 1. Log in to Analytics as Lucy.
- **2.** Open the OppTeamMember opportunity. Notice that Lucy can't view the opportunity associated with the opportunity team anymore because she is not a member of the team.



Available in Salesforce Classic and Lightning Experience.

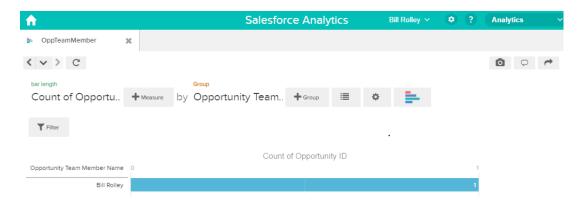
Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.



No results meet those criteria. Try changing your filters.

**3.** Log out and now log in as Bill.

Bill can view the opportunity that is shared by the opportunity team of which he is a member.



Row-Level Security Example based on Role Hierarchy and Record Ownership

Let's look at an example where you create a dataset based on Salesforce data and then implement row-level security based on the Salesforce role hierarchy and record ownership. In this example, you will create a dataset that contains all opportunities. To restrict access on each record in the dataset, you will create a security policy where each user can view only opportunities that they own or that are owned by their subordinates based on the Salesforce role hierarchy. This process requires multiple steps that are described in the sections that follow.

#### IN THIS SECTION:

### 1. Determine Which Data to Include in the Dataset

First, determine what data you want to include in the dataset. For this example, you will create the OppRoles dataset that contains all opportunities as well as user details about each opportunity owner, such as their full name, division, and title.

# 2. Design the Dataflow to Load the Data

Now it's time to figure out how the dataflow will extract the data and load it into a dataset. You start by creating this high-level design for the dataflow.

### 3. Determine Row-Level Security for the Dataset

Now it's time to think about row-level security. How will you restrict access to each record in this dataset?

### 4. Modify the Dataflow Based on Row-Level Security

Now it's time to modify the dataflow definition file to account for the predicate.

#### 5. Create the Dataset

Now that you have the final dataflow definition file, you can create the dataset.

#### 6. Test Row-Level Security for the Dataset

You must verify that the predicate is applied properly and that each user can see the appropriate opportunities.

## SEE ALSO:

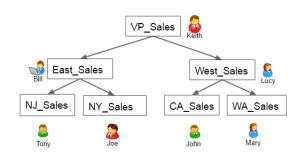
flatten Parameters

#### **Determine Which Data to Include in the Dataset**

First, determine what data you want to include in the dataset. For this example, you will create the OppRoles dataset that contains all opportunities as well as user details about each opportunity owner, such as their full name, division, and title.

You will obtain opportunities from the Opportunity object and user details from the User object. Both are objects in Salesforce.

In this example, your Salesforce organization has the following role hierarchy and users.



# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

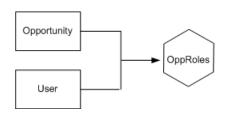
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Also, your organization contains the following opportunities, most of which are owned by Keith.



### Design the Dataflow to Load the Data

Now it's time to figure out how the dataflow will extract the data and load it into a dataset. You start by creating this high-level design for the dataflow.



The dataflow will extract data from the Opportunity and User objects, join the data, and then load it into the OppRoles dataset.

it into the OppRoles dataset.

Now let's implement that design in JSON, which is the format of the dataflow definition file. A dataflow definition file contains

Based on the design, you create the JSON shown below.

transformations that extract, transform, and load data into a dataset.

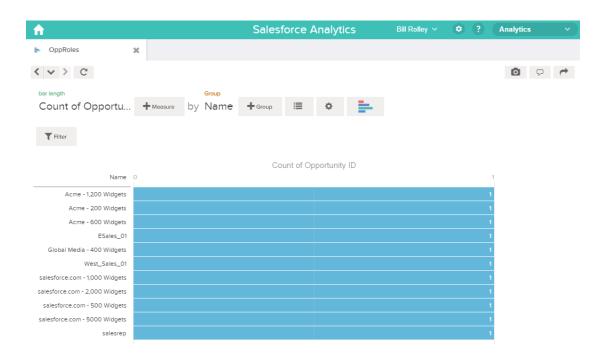
# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

```
"Extract User": {
   "action": "sfdcDigest",
   "parameters": {
   "object": "User",
   "fields": [
     { "name": "Id" },
      { "name": "Username" },
      { "name": "LastName" },
      { "name": "FirstName" },
      { "name": "Name" },
      { "name": "CompanyName" },
      { "name": "Division" },
      { "name": "Department" },
      { "name": "Title" },
      { "name": "Alias" },
      { "name": "CommunityNickname" },
      { "name": "UserType" },
      { "name": "UserRoleId" }
   }
},
"Augment Opportunity User": {
   "action": "augment",
   "parameters": {
      "left": "Extract Opportunity",
      "left_key": [
         "OwnerId"
      "right": "Extract User",
      "relationship": "Owner",
      "right select": [
         "Name"
      ],
      "right_key": [
         "Id"
      ]
},
"Register": {
   "action": "sfdcRegister",
   "parameters": {
     "alias": "OppRoles",
      "name": "OppRoles",
      "source": "Augment Opportunity User",
      "rowLevelSecurityFilter": ""
}
```

If you were to run this dataflow, Analytics would generate a dataset with no row-level security. As a result, any user that has access to the dataset would be able to view all opportunities. For example, as shown below, Bill would be able to view all opportunities, including those owned by his manager Keith.



You need to apply row-level security to restrict access to records in this dataset.

### **Determine Row-Level Security for the Dataset**

Now it's time to think about row-level security. How will you restrict access to each record in this dataset?

You decide to implement the following predicate on the dataset.



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```
'ParentRoleIDs' == "$User.UserRoleId" || 'OwnerId' == "$User.Id"
```



**Note**: The current dataflow doesn't contain logic to create a dataset column named "ParentRolelDs." ParentRolelDs is a placeholder for the name of a column that will contain this information. In the next step, you will modify the dataflow to add this column to the dataset. This column name will change based on how you configure the dataflow.

Based on the predicate, Analytics returns an opportunity record if:

- The user who submits the query is a parent of the opportunity owner based on the Salesforce role hierarchy. Analytics determines this based on their role IDs and the role hierarchy.
- Or, the user who submits the query on the dataset is the opportunity owner.

Let's examine both parts of this predicate.

| Predicate Part                         | Description   |
|--|---|
| 'ParentRoleIDs' == "\$User.UserRoleId" | <ul> <li>ParentRoleIDs refers to a dataset column that contains a comma-separated list of role IDs of all users above the opportunity owner based on the role hierarchy. You will create this dataset column in the next section.</li> <li>\$User.UserRoleId refers to the UserRoleId column of the User object. Analytics looks up the user role ID of the user who submits the query from the User object.</li> </ul> |
| 'Ownerld' == "\$User.ld"               | <ul> <li>Ownerld refers to the dataset column that contains the user ID of the owner of each opportunity.</li> <li>\$User.Id refers to the Id column of the User object. Analytics looks up the user ID of the user who submits the query from the User object.</li> </ul>  |

### **Modify the Dataflow Based on Row-Level Security**

Now it's time to modify the dataflow definition file to account for the predicate.

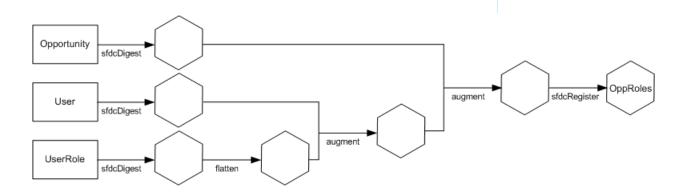
In this scenario, you have to make changes to the dataflow based on the predicate.

Add a column in the dataset that stores a comma-separated list of the role IDs of all parents for
each opportunity owner. When you defined the predicate in the previous step, you temporarily
referred to this column as "ParentRoleIDs." To add the column, you redesign the dataflow as
shown in the following diagram:

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The new dataflow design contains the following changes:

- Extracts the role IDs from the UserRole object.
- Uses the Flatten transformation to generate a column that stores a comma-separated list of the role IDs of all parents of each
  user. When you determined the predicate in the previous step, you temporarily referred to this column as "ParentRoleIDs."
- Link the new column to the OppRoles dataset.

• Add the predicate to the Register transformation that registers the OppRoles dataset.

You modify the dataflow as shown below.

```
"Extract Opportunity": {
   "action": "sfdcDigest",
   "parameters": {
      "object": "Opportunity",
      "fields": [
         { "name": "Id" },
         { "name": "Name" },
         { "name": "Amount" },
         { "name": "StageName" },
         { "name": "AccountId" },
         { "name": "OwnerId" }
      1
   }
},
"Extract_User": {
   "action": "sfdcDigest",
   "parameters": {
      "object": "User",
      "fields": [
        { "name": "Id" },
         { "name": "Username" },
         { "name": "LastName" },
         { "name": "FirstName" },
         { "name": "Name" },
         { "name": "CompanyName" },
         { "name": "Division" },
         { "name": "Department" },
         { "name": "Title" },
         { "name": "Alias" },
         { "name": "CommunityNickname" },
         { "name": "UserType" },
         { "name": "UserRoleId" }
   }
},
"Extract UserRole": {
   "action": "sfdcDigest",
   "parameters": {
      "object": "UserRole",
      "fields": [
         { "name": "Id" },
         { "name": "ParentRoleId" },
         { "name": "RollupDescription" },
         { "name": "OpportunityAccessForAccountOwner" },
         { "name": "CaseAccessForAccountOwner" },
         { "name": "ContactAccessForAccountOwner" },
         { "name": "ForecastUserId" },
         { "name": "MayForecastManagerShare" },
         { "name": "LastModifiedDate" },
         { "name": "LastModifiedById" },
```

```
{ "name": "SystemModstamp" },
         { "name": "DeveloperName" },
         { "name": "PortalAccountId" },
         { "name": "PortalType" },
         { "name": "PortalAccountOwnerId" }
   }
},
"Flatten UserRole": {
   "action": "flatten",
   "parameters": {
      "multi_field": "Roles",
      "parent field": "ParentRoleId",
      "path_field": "RolePath",
      "self field": "Id",
      "source": "Extract_UserRole"
},
"Augment_User_FlattenUserRole": {
   "action": "augment",
   "parameters": {
      "left": "Extract User",
      "left key": [
         "UserRoleId"
      ],
      "relationship": "Role",
      "right": "Flatten UserRole",
      "right_key": [
         "Id"
      ],
      "right_select": [
         "Roles",
         "RolePath"
      ]
"Augment Opportunity UserWithRoles": {
   "action": "augment",
   "parameters": {
      "left": "Extract_Opportunity",
      "left key": [
         "OwnerId"
      "right": "Augment User FlattenUserRole",
      "relationship": "Owner",
      "right_select": [
         "Name",
         "Role.Roles",
         "Role.RolePath"
      ],
      "right_key": [
         "Id"
      ]
   }
```

```
"Register": {
    "action": "sfdcRegister",
    "parameters": {
        "alias": "OppRoles",
        "name": "OppRoles",
        "source": "Augment_Opportunity_UserWithRoles",
        "rowLevelSecurityFilter": "'Owner.Role.Roles' == \"$User.UserRoleId\" || 'OwnerId'
== \"$User.Id\""
    }
}
```



**Note**: In this example, the dataset has columns Owner.Role.Roles and Ownerld. A user can view the values of these columns for each record to which they have access.

#### **Create the Dataset**

Now that you have the final dataflow definition file, you can create the dataset.

Warning: If you wish to perform the steps in this sample implementation, verify that you have all required Salesforce objects and fields, and perform the steps in a non-production environment. Ensure that these changes do not impact other datasets that you already created. Also, always make a backup of the existing dataflow definition file before you make changes because you cannot retrieve old versions of the file.

To create the dataset, perform the following steps.

- In Analytics, click the gear icon ( ) and then select **Data Monitor** to open the data monitor.
   The Jobs View of the data monitor appears by default.
- 2. Select Dataflow View.
- **3.** Click the actions list (1) for the dataflow and then select **Download** to download the existing dataflow definition file.

# **EDITIONS**

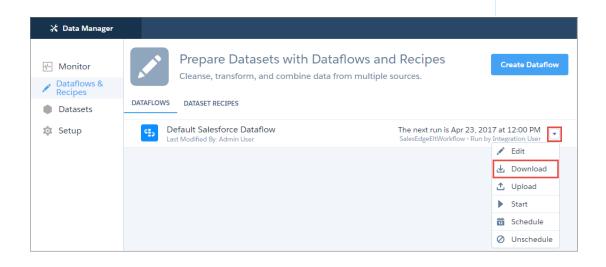
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Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

## **USER PERMISSIONS**

To download, upload, run, and monitor a dataflow:

Edit Analytics Dataflows



- **4.** Open the dataflow definition file in a JSON or text editor.
- **5.** Add the JSON determined in the previous step.
- **6.** Before you save the dataflow definition file, use a JSON validation tool to verify that the JSON is valid.

  An error occurs if you try to upload the dataflow definition file with invalid JSON. You can find JSON validation tool on the internet.
- 7. Save and close the dataflow definition file.
- 8. In the Dataflow View of the data monitor, click the actions list for the dataflow and then select **Upload**.
- **9.** Select the updated dataflow definition file and click **Upload**.
- 10. In the Dataflow View of the data monitor, click the actions list for the dataflow and then select **Run** to run the dataflow job.
- 11. Click the **Refresh Jobs** button ( ) to view the latest status of the dataflow job. You can view the OppRoles dataset after the dataflow job completes successfully.
- Note: If you are adding a predicate to a dataset that was previously created, each user must log out and log back in for the predicate to take effect.

### **Test Row-Level Security for the Dataset**

You must verify that the predicate is applied properly and that each user can see the appropriate opportunities.

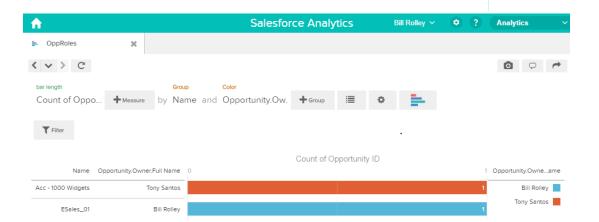
- 1. Log in to Analytics as Bill.
- **2.** Open the OppRoles opportunity. Notice that Bill can't see his manager Keith's opportunities anymore. Now, he can see only his opportunity and his subordinate Tony's opportunity.



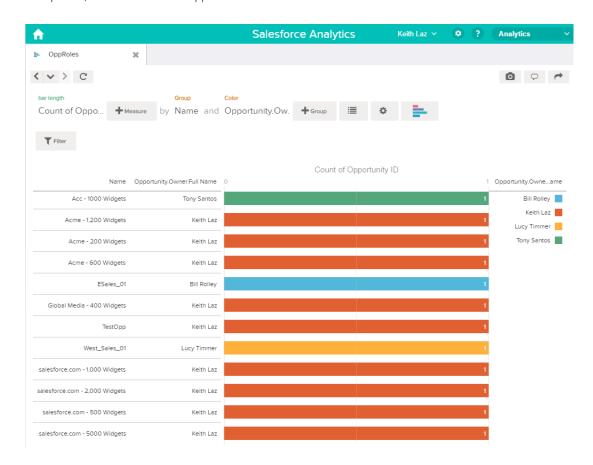
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## **USER PERMISSIONS**



Log out and now log in as Keith.As expected, Keith can still see all opportunities.



### Salesforce Sharing Inheritance for Datasets

Use sharing inheritance to allow Analytics to use the same sharing rules for your datasets as Salesforce uses for your objects.

As a Salesforce administrator, you have likely set up sharing rules to suit your user hierarchy so that users have access to data appropriate to their role. These sharing rules include rules for Apex or custom sharing and manual, hierarchy, role, group, and team-based sharing. For more information, see Sharing Settings.

For supported objects, administrators can enable sharing inheritance in Analytics to use the Salesforce sharing settings in Analytics. When creating your datasets during the ELT (extract, load, and transform) process, or when editing existing datasets, specify which objects use sharing.

### Limitations

These limitations could result in leaking information when using sharing inheritance.

• You can inherit sharing settings only from one object, regardless of how many source objects are used in creating a dataset. Because the dataset can be constructed from many objects, each object could be using a different security model.

- The computeRelative and delta dataflow transformations could merge information from records with different security, which can result in leaking information when using sharing inheritance.
- Calculated fields are treated as normal fields. Row-level security applied during the calculation in Salesforce is ignored.

Here are some other limitations of the Analytics sharing inheritance feature.

- Sharing inheritance supports Accounts, Opportunities, Orders, Cases, Contacts, Leads, and custom objects. If you use other objects, such as Campaign, Idea, or Site, you must use security predicates for those objects.
- A dataset using sharing must also have a security predicate defined.
- If a user can see more than 3,000 records on the object in Salesforce core but the user does not have the View All Data permission, sharing inheritance is not used and the backup security predicate takes effect.
- Sharing isn't automatically applied to datasets. You apply sharing to each dataset manually.
- Changes to the rowLevelSharingSource or rowLevelSecurityFilter security settings in a dataflow have no effect on datasets that exist. You must change those settings on the edit dataset page.
- For a custom object to show up in the security sharing source list, the primary key of the custom object must be a field in the dataset. A foreign key doesn't satisfy this requirement. For example, if you have Opportunity. Accountld in your dataset but not Account.ld, you can't inherit sharing from the Account object.

#### IN THIS SECTION:

#### Set Up Sharing Inheritance

To enable sharing inheritance in Analytics, specify which datasets inherit sharing rules, and set a default security predicate.

### Set Up Sharing Inheritance

To enable sharing inheritance in Analytics, specify which datasets inherit sharing rules, and set a default security predicate.



**Note:** We recommend testing in a sandbox environment before rolling out sharing inheritance to production. Test your particular use cases against your org's security model and data to make sure that sharing inheritance works for you.

### **Enable or Disable Sharing Inheritance**

Sharing inheritance is turned on by default in new orgs.

- 1. From Setup, in the Quick Find box, enter Analytics, and then select **Settings**.
- 2. Select Inherit sharing from Salesforce, and click Save.

### **Configure Dataflows**

For each dataset that you want to inherit sharing, modify the dataflow.

- 1. Specify the source object and a default security predicate. For more information, see Configure the Dataflow on page 104.
- 2. Add the rowLevelSharingSource parameter to the sfdcRegister node parameters for the dataset. For more information, see sfdcRegister. The rowLevelSharingSource parameter takes a string, which is the API name for the object from which to inherit sharing. In this example, the parameter specifies that the Salesforce sharing rules on the Opportunity object should be inherited.

```
"reg": {
   "action": "sfdcRegister",
   "parameters": {
       "source": "Opportunity_final",
```

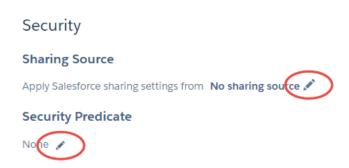
```
"name": "Opportunity w/ Account",
   "alias": "Oppty_w_Acct",
   "rowLevelSharingSource": "Opportunity",
   "rowLevelSecurityFilter": "'OwnerId' == \"$User.Id\""
},
```

3. When setting rowLevelSharingSource, you must also set the security predicate (rowLevelSecurityFilter). In the example, when sharing limits are exceeded, users see only the opportunities that they own. Set the security predicate to false to block all users not covered by sharing.

### **Configure Datasets**

On datasets that exist, changes to security settings in a dataflow have no effect. You must also change those settings on the edit dataset page.

- Note: If the settings in the dataset and dataflow don't match, you see a warning that says, "The sharing source and security predicate in this dataset version must be the same as in the dataflow".
- 1. Edit the dataset. For more information, see Edit a Dataset on page 266.
- **2.** For Sharing Source, select the API name for the object. Only valid objects are displayed in the list. For example, the primary key of the object must be a field in the dataset.
- 3. For Security Predicate, enter the default security predicate. If you use sharing inheritance, you must also specify a default predicate. Set the security predicate to false to block all users not covered by sharing. This security predicate is the default when sharing is enabled on existing datasets.



## Predicate Expression Syntax for Datasets

You must use valid syntax when defining the predicate expression.

The predicate expression must have the following syntax:

```
<dataset column> <operator> <value>
```

For example, you can define the following predicate expression for a dataset:

```
'UserId' == "$User.Id"
```

You can create more complex predicate expressions such as:

```
('Expected_Revenue' > 4000 || 'Stage Name' == "Closed Won") && 'isDeleted' != "False"
```

Consider the following requirements for the predicate expression:

- The expression is case-sensitive.
- The expression cannot exceed 1,000 characters.
- There must be at least one space between the dataset column and the operator, between the operator and the value, and before and after logical operators. This expression is not valid: 'Revenue' > 100. It must have spaces like this: 'Revenue' > 100.

If you try to apply a predicate to a dataset and the predicate is not valid, an error appears when any user tries to guery the dataset.

#### IN THIS SECTION:

### Dataset Columns in a Predicate Expression

You include at least one dataset column as part of the predicate expression.

#### Values in a Predicate Expression

The value in the predicate expression can be a string literal or number literal. It can also be a field value from the User object in Salesforce.

#### **Escape Sequences**

You can use the backslash character (\) to escape characters in column names and string values in a predicate expression.

### Character Set Support

Analytics supports UTF-8 characters in dataset column names and values in a predicate expression. Analytics replaces non-UTF-8

characters with the UTF-8 symbol ( ). If Analytics has to replace a non-UTF-8 character in a predicate expression, users may experience unexpected query results.

### **Special Characters**

Certain characters have a special meaning in Analytics.

### Operators

You can use comparison operators and logical operators in predicate expressions.

### Sample Predicate Expressions for Datasets

Review the samples to see how to structure a predicate expression.

### Dataset Columns in a Predicate Expression

You include at least one dataset column as part of the predicate expression.

Consider the following requirements for dataset columns in a predicate expression:

- Column names are case-sensitive.
- Column names must be enclosed in single quotes ('). For example, 'Region' == "South"
  - Note: A set of characters in double quotes is treated as a string rather than a column name.
- Single quotes in column names must be escaped. For example, 'Team\'s Name' == "West Region Accounts"

### Values in a Predicate Expression

The value in the predicate expression can be a string literal or number literal. It can also be a field value from the User object in Salesforce. Consider the following requirements for each value type.

| Value Type     | Requirements  | Predicate Expression Examples  |
|----------------|---|--|
| string literal | Enclose in double quotes and escape the double quotes.  | <ul><li>'Owner' == "Amber"</li><li>'Stage Name' == "Closed Won"</li></ul>  |
| number literal | Can be a float or long datatype. Do not enclose in quotes.  | <ul><li>'Expected_Revenue' &gt;= 2000.00</li><li>'NetLoss' &lt; -10000</li></ul>   |
| field value    | When referencing a field from the User object, use the \$User.[field] syntax. Use the API name for the field.   | <pre>'Owner.Role' == "\$User.UserRoleId"</pre>   |
|                | You can specify standard or custom fields of type string, number, or multi-value picklist.  When you define a predicate for a dataset, you must have read access on all User object fields used to create the predicate expression. | <ul> <li>'GroupID' ==         "\$User.UserGroupId_c"</li> <li>Note: Supported User object field value types are string, number, and multi-value picklist. Other types (for example, boolean) are not supported.</li> </ul> |
|                | However, when a user queries a dataset that has a predicate based on the User object, Analytics uses the access permissions of the Insights Security User to evaluate the predicate expression based on the User object.            |  |
|                | Note: By default, the Security User does not have access permission on custom fields of the User object.  |  |
|                | To grant the Security User read access on a field, set field-level security on the field in the user profile of the Security User.  |  |

## **Escape Sequences**

You can use the backslash character (\) to escape characters in column names and string values in a predicate expression.

You can use the \' escape sequence to escape a single quote in a column name. For example:

```
'Team\'s Name' == "West Region Accounts"
```

You can use the following escape sequences for special characters in string values.

| Sequence | Meaning                 |
|----------|-------------------------|
| \b       | One backspace character |

| Sequence | Meaning                    |
|----------|----------------------------|
| \n       | New line                   |
| \r       | Carriage return            |
| \t       | Tab                        |
| VZ       | CTRL+Z (ASCII 26)          |
| \"       | One double-quote character |
| \\       | One backslash character    |
| \0       | One ASCII null character   |

# **Character Set Support**

Analytics supports UTF-8 characters in dataset column names and values in a predicate expression. Analytics replaces non-UTF-8 characters with the UTF-8 symbol ( ). If Analytics has to replace a non-UTF-8 character in a predicate expression, users may experience unexpected query results.

# **Special Characters**

Certain characters have a special meaning in Analytics.

| Character | Name         | Description   |
|-----------|--------------|---|
| ,         | Single quote | Encloses a dataset column name in a predicate expression.   |
|           |              | Example predicate expression:   |
|           |              | <pre>'Expected_Revenue' &gt;= 2000.00</pre>   |
| и         | Double quote | Encloses a string value or field value in a predicate expression.   |
|           |              | <pre>Example predicate expression: 'OpportunityOwner' == "Michael Vesti"</pre>                              |
| ()        | Parentheses  | Enforces the order in which to evaluate a predicate expression.   |
|           |              | Example predicate expression:   |
|           |              | <pre>('Expected_Revenue' &gt; 4000    'Stage Name' == "Closed Won") &amp;&amp; 'isDeleted' != "False"</pre> |

| Character | Name        | Description   |
|-----------|-------------|---|
| \$        | Dollar sign | Identifies the Salesforce object in a predicate expression.         |
|           |             | Note: You can only use the User object in a predicate expression.   |
|           |             | Example predicate expression:                                       |
|           |             | 'Owner.Role' ==   |
|           |             | "\$User.UserRoleId"   |
|           | Period      | Separates the object name and field name in a predicate expression. |
|           |             | Example predicate expression:                                       |
|           |             | 'Owner' == "\$User.UserId"  |

# Operators

You can use comparison operators and logical operators in predicate expressions.

## IN THIS SECTION:

**Comparison Operators** 

Comparison operators return true or false.

**Logical Operators** 

Logical operators return true or false.

# Comparison Operators

Comparison operators return true or false.

Analytics supports the following comparison operators.

| Operator | Name       | Description   |
|----------|------------|---|
| ==       | Equals     | True if the operands are equal. String comparisons that use the equals operator are case-sensitive.  Example predicate expressions:  'Stage Name' == "Closed Won" |
| !=       | Not equals | True if the operands are not equal. String comparisons that use the not equals operator are case-sensitive.   |
|          |            | Example predicate expression:   |
|          |            | 'isDeleted' != "False"  |
| <        | Less than  | True if the left operand is less than the right operand.  |

| Operator | Name                    | Description  |
|----------|-------------------------|--|
|          |                         | Example predicate expression:  |
|          |                         | 'Revenue' < 100  |
| <=       | Less or equal           | True if the left operand is less than or equal to the right operand.   |
| >        | Greater than            | True if the left operand is greater than the right operand.  |
| >=       | Greater or equal        | True if the left operand is greater than or equal to the right operand.  |
| in       | Multi-value list filter | True if the left operand exists in the list of strings substituted for a multi-value picklist (field value).   |
|          |                         | Example predicate expression:  |
|          |                         | 'Demog' in ["\$User.Demographicc"]   |
|          |                         | In this example, $Demographic\_c$ is of type $multiPicklistField$ . During evaluation, the multi-value picklist field is substituted by a list of strings, with 1 string per user-selected item. |
|          |                         | Note: Comma-separated lists are not supported within the square-bracket construct.   |

You can use the <, <=, >, and >= operators with measure columns only.

# Logical Operators

Logical operators return true or false.

Analytics supports the following logical operators.

| Operator | Name        | Description  |
|----------|-------------|--|
| &&       | Logical AND | True if both operands are true.                              |
|          |             | Example predicate expression:                                |
|          |             | 'Stage Name' == "Closed Won" &&<br>'isDeleted' != "False"    |
| II       | Logical OR  | True if either operand is true.                              |
|          |             | Example predicate expression:                                |
|          |             | 'Expected_Revenue' > 4000    'Stage Name'<br>== "Closed Won" |

# Sample Predicate Expressions for Datasets

Review the samples to see how to structure a predicate expression.

The samples are based on the following Opportunity dataset.

| Opportunity | Expected_Rev | Owner    | OwnerRoleID | Stage_Name  | IsDeleted |
|-------------|--------------|----------|-------------|-------------|-----------|
| ОррА        | 2000.00      | Bill     | 20          | Prospecting | True      |
| ОррВ        | 3000.00      | Joe      | 22          | Closed Won  | False     |
| ОррС        | 1000.00      | 可爱的花     | 36          | Closed Won  | False     |
| OppD        | 5000.00      | O'Fallon | 18          | Prospecting | True      |
| ОррЕ        |              | Joe      | 22          | Closed Won  | True      |

Let's take a look at some examples to understand how to construct a predicate expression.

| Predicate Expression  | Details   |
|---|---|
| 'OwnerRoleID' == "\$User.UserRoleId"  | Checks column values in the User object.                |
| <pre>'Expected_Rev' &gt; 1000 &amp;&amp; 'Expected_Rev' &lt;= 3000</pre>          |   |
| 'Owner' = "Joe"    'Owner' = "Bill"   |   |
| ('Expected_Rev' > 4000    'Stage Name' == "Closed Won") && 'isDeleted' != "False" | Parentheses specify the order of operations.            |
| 'Stage Name' == "Closed Won" && 'Expected_Rev' > 70000                            |   |
| 'Owner' == "可爱的花"   | String contains Unicode characters.                     |
| 'Owner' == "O\'Fallon"  | Single quote in a string requires the escape character. |
| 'Stage Name' == ""  | Checks for an empty string.                             |

# Customize the Display of Dataset Fields and Values

Choose what shows up in lenses and dashboards. Rename and hide dataset fields. Set the default columns that appear in tables. Set the labels and default colors for dimension values.

## IN THIS SECTION:

## View and Configure Dataset Fields

You can view, hide, and rename dataset fields. Users with view-only access to the dataset can view the names and API names of fields. You can also change the display format of measure fields.

### Choose the Default Dataset Fields That Appear in a Table

Make tables your own by choosing the default fields. For example, show the most commonly used fields in a particular order. If you don't set the defaults, the first five measures and five dimensions are selected in alphabetical order.

### Change the Labels and Colors of Dataset Dimension Values

Change the display labels and default colors of dimensions values to make them easier to understand and spot. The label doesn't change the underlying data stored in the dataset or the API names of the fields. The change only affects the appearance in the user interface.

# View and Configure Dataset Fields

You can view, hide, and rename dataset fields. Users with view-only access to the dataset can view the names and API names of fields. You can also change the display format of measure fields.

1. To configure the dataset fields, click **Fields** while exploring the dataset.

# EDITIONS

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

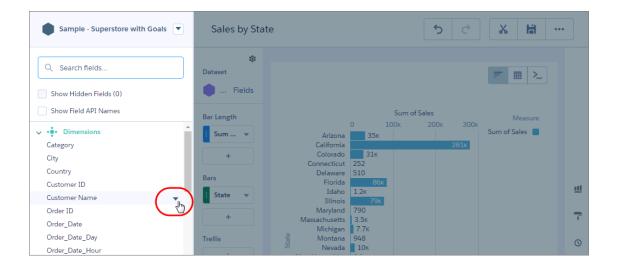
## **USER PERMISSIONS**

To view visualizations:

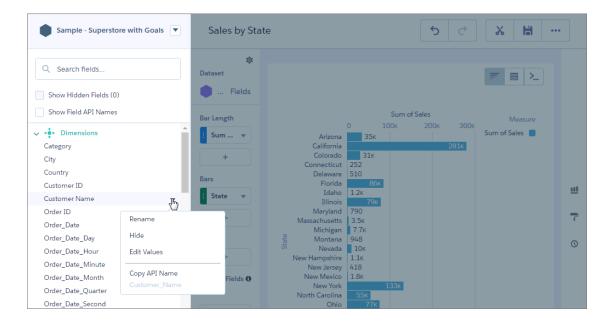
Use Analytics



**2.** To reveal a field's context menu, hover over the right edge of the field.



**3.** Click the arrow to reveal the context menu.

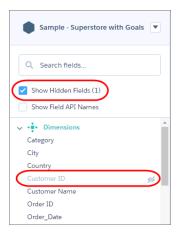


**4.** Select **Rename** to rename the field's visible name.

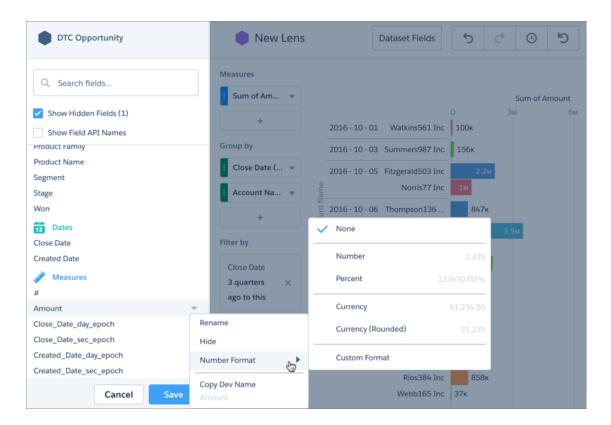
Instead of using the menu, you can click any field's name to edit it. You can copy the field's API name, but you cannot change it. To display every field's API name in the Dataset Fields list of fields, click **Show Field API Names**.

**5.** To hide a field, select **Hide** from its context menu.

The field is hidden from the Dataset Fields list of fields, and hidden from users who explore the dataset, and hidden from all lenses or dashboards that currently use the dataset. However, the field is still accessible via lens and dashboard JSON, Analytics REST API, and SAQL queries. To view hidden fields in the Dataset Fields list, click **Show Hidden Fields**.



**6.** For measures, you can choose to apply a number format.



7. Click **Save** to save the changes.

## Choose the Default Dataset Fields That Appear in a Table

Make tables your own by choosing the default fields. For example, show the most commonly used fields in a particular order. If you don't set the defaults, the first five measures and five dimensions are selected in alphabetical order.

1. To configure the dataset fields, click **Fields** while exploring the dataset.

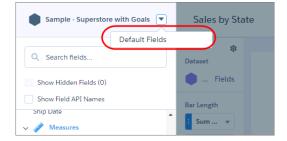
# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

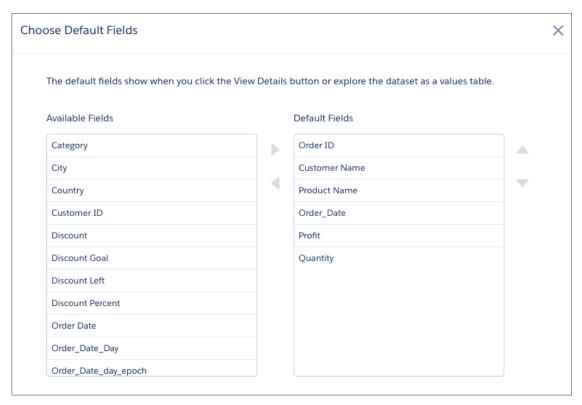
Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.



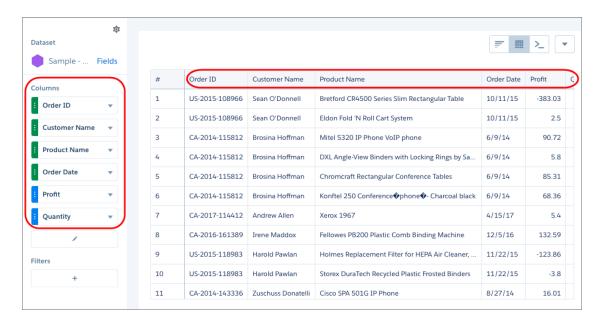
2. Click the dropdown arrow next to the dataset name, and click **Default Fields**.



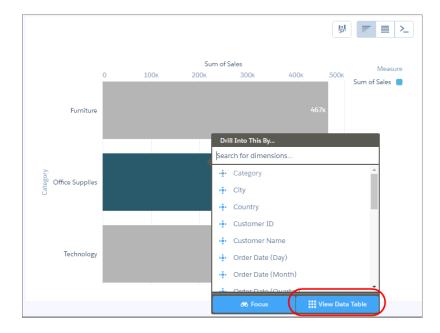
**3.** Select the fields to show by default, use the up and down arrows to reorder them, and click **Update**.



When you explore the dataset as a values table, the selected fields appear in the specified order.



You see the same table columns and order when you click **View Data Table** to view the data in a tabular format.



## Change the Labels and Colors of Dataset Dimension Values

Change the display labels and default colors of dimensions values to make them easier to understand and spot. The label doesn't change the underlying data stored in the dataset or the API names of the fields. The change only affects the appearance in the user interface.

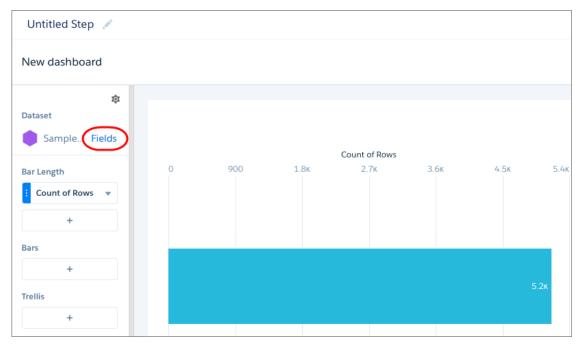
Because these changes are done at the dataset level, the changes affect all charts and tables that use this dimension. However, you can override the default colors for a specific chart by setting conditional formatting in the chart's widget properties.

1. While exploring a dataset as a lens or creating a step in the dashboard designer, click **Fields**.

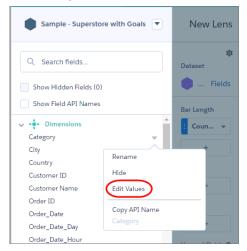
# EDITIONS

Available in Salesforce Classic and Lightning Experience.

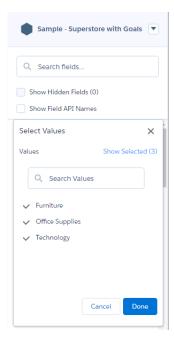
Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.



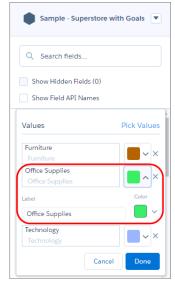
2. Click the dropdown arrow next to the dimension, and select **Edit Values**.



**3.** Select the dimension values to edit, and click **Done**.



**4.** You can change the default color and label for each dimension value.



**5.** Click **Save** to save the changes.

If you change the colors of dimension values, the color doesn't appear in a chart until you set up conditional formatting on the column in the chart's widget properties. For more information, see Automatically Highlight Data with Conditional Formatting.

### Delete a Dataset

Delete unnecessary datasets from your My Private App or in shared apps on which you have at least Editor access. Removing datasets reduces clutter and helps you avoid reaching your org's limit for rows across registered datasets.

You can't delete a dataset that is used in a dashboard, lens, or dataflow. Before you delete a dataset, first remove references to it from dashboards and delete associated lenses.

If a dataflow transformation —like edgemart or sfdcRegister— references the dataset, you must remove the reference from the dataflow. For example, to delete the "Opportunities" dataset, you must remove the sfdcRegister transformation from the dataflow snippet shown below.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

## **USER PERMISSIONS**

To delete a dataset:

 Use Analytics AND Editor access to the dataset's app

```
"Register_Dataset": {
    "action": "sfdcRegister",
    "parameters": {
        "alias": "Opportunities",
        "name": "Opportunities",
        "source": "Extract_Opportunities"
    }
},
```

1 Tip: Review the usage information on the dataset's edit page to see where the dataset is used.



- Warning: You can't recover a deleted dataset.
- 1. To edit a dataset from Analytics home or an app page, follow these steps.
  - **a.** Hover over the dataset and click ...
  - b. Click Edit.

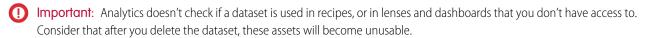
**Analytics Datasets** 

- 2. To edit a dataset from the data manager, follow these steps.
  - a. In the data manager, click the Datasets tab.
  - On the right of the dataset, click .
  - c. Click Edit Dataset.

#### 3. Click Delete Dataset.

If the dataset is in use, Analytics stops the deletion and shows a list of assets that reference the dataset. Click Got It and resolve these references before trying again.

4. Click Delete Permanently.



## **Datasets**

A dataset is a collection of related data that is stored in a denormalized, yet highly compressed form. There are multiple ways to create datasets. You can also edit datasets after they've been created.



🚺 Tip: To ensure that you don't reach the row limit for all registered datasets, delete unused datasets. The maximum is 100 million rows per platform license, or 250 million per platform license purchased before October 20, 2015.

### SEE ALSO:

Create a Dataset with External Data Edit a Dataset Delete a Dataset

# **Data Monitor**

The data monitor provides options for you to manage jobs.

### SEE ALSO:

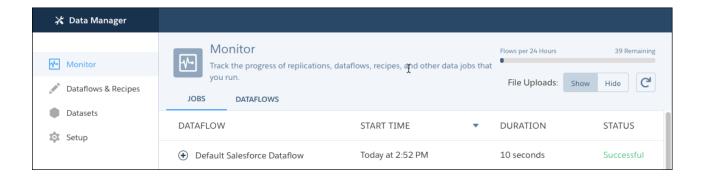
Start and Stop a Dataflow Schedule a Dataflow Monitor a Dataflow Job Monitor an External Data Upload

# Data Manager

The data manager is where you monitor your data jobs, prepare datasets with recipes and dataflows, and set up replication and connections.

To open the data manager in Analytics, click the gear icon ( ) and then click **Data Manager**.

Analytics External Data



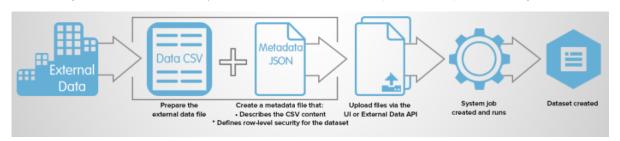
You land on the Monitor tab, where you can see the progress of your recipe, replication, and other dataflow jobs. The Dataflows & Recipes tab gives you access to your two key data preparation tools. Go to the Datasets tab to view your datasets and replicated data, and use them to create recipes. If you have replication enabled, the Setup tab is where you can view and update settings for your replication-enabled Salesforce objects, and set up connections to remote data.

### SEE ALSO:

Optimize Your Dataflows with Replication Prepare Datasets with Recipes Data Monitor

# **External Data**

You can integrate external data into Analytics to make the data available for gueries from explorer and designer.



The External Data API enables you to upload external data files to Analytics. The External Data API can upload .csv files, and you can optionally specify the structure of your data by defining metadata in JSON format.

The External Data API is available in API version 31 and later.

The high-level steps for uploading external data by using the API are:

- 1. Prepare your data in CSV format, and then create a metadata file to specify the structure of the data.
- 2. Connect programmatically to your Salesforce organization.
- **3.** Configure the upload by inserting a row into the InsightsExternalData object, and then set input values such as the name of the dataset, the format of the data, and the operation to perform on the data.
- 4. Split your data into 10-MB chunks, and then upload the chunks to InsightsExternalDataPart objects.
- 5. Start the upload by updating the Action field in the InsightsExternalData object.
- **6.** Monitor the InsightsExternalData object for status updates, and then verify that the file upload was successful.

# Explore and Visualize Your Data

When sifting through an overwhelming amount of business data, sometimes you know exactly what you're looking for. Other times you don't, but you recognize it when you see it. Salesforce Analytics gives you a fast, fluid way to discover the compelling stories within your data and to create the right visuals to tell your story.

After your data is uploaded, explore freely. Drill through the data by using interactive visualizations. Surface unexpected insights that can transform your business. Then let Analytics do the work of producing dynamic charts that look sharp and communicate volumes.

#### IN THIS SECTION:

### Learn to Use Explorer

See what unexpected insights you can surface by interactively exploring and visualizing your data, using explorer tools.

#### **Explore Data with Tables**

You can use tables to get a view of the data that is close to the underlying dataset, and you can use tables to manipulate and extend the data to expose fresh insights. With values, compare, and pivot tables, Analytics explorer gives you options for both of those goals.

#### Visualize Data With Charts

If your goal is to understand vast amounts of business data, and to communicate that understanding with coworkers, partners, and customers, being able to visualize your data is critical. Analytics provides a chart for every need, each a means for illustrating key aspects of your business in just the right way.

#### Clone a Lens

Build upon a visualization by cloning its containing lens to a new tab where you can continue exploring. You can save the original in its own tab.

#### Save a Visualization

Save your visualization as a lens.

#### Share a Visualization

Share a visualization with your colleagues by posting to Chatter, getting its unique URL, downloading a screenshot of it, or downloading its filtered data. A Chatter post provides an image and a link to the asset—lens, dashboard, or app—in Analytics. Colleagues with the link and access to the asset can drill down and explore the information that's presented. To share without giving access to the asset, use the download options.

### SEE ALSO:

Converse with Your Data (Beta)

# Learn to Use Explorer

See what unexpected insights you can surface by interactively exploring and visualizing your data, using explorer tools.

### IN THIS SECTION:

#### View Your Data in a Lens

When you look at data in an exploratory mode, you do so in a *lens*. A lens has several aspects: it's how you view data in a dataset, it's the place where you explore the data graphically, and it's the basis for building any dashboard.

### Group Your Data into Categories

Group data to organize it so that the data is displayed in useful categories.

#### Filter Your Data

Apply filters in a lens to unclutter your chart and focus on the subset of data that's most relevant for your business unit, project, or management team. You can create partial filters on measures and dimensions. You can also create global lens filters on measures, dimensions, or dates and apply them to the compare table in a single step. Applying lens filters to the data also makes it easier for you to drill down or focus on specific datapoints.

### Change the Sort Order

Choose whether data in your chart visualization is sorted ascending, sorted descending, or unsorted.

### Change the Chart Type

Switch between chart types to see which visualization options tell the most compelling story for your data.

#### Change Measures

Your choice of measure defines your entire visualization and determines the scope of your exploration. For example, change the measure and the aggregation method from "Count of Opportunities" to "Sum of Amount." Then add a second measure to see 2 visualizations side by side.

### Drill Deeper Into Data

You can drill deeper into your data to explore the underlying information and surface hidden insights.

### Focus on Selected Data

You can focus your exploration by changing the view to include only specific data from an existing table or chart.

### Change the Chart Scale

With some data, a chart displays values that range widely on an axis and make the visualization more difficult to understand. You can constrict the range's scale by applying a logarithmic scale. Scaling is available for certain charts only.

### Return to a Previous View by Using History

Exploring your data can lead you down many paths. Not all of them are fruitful, and that's OK. Explorer keeps a full history of your activity in a lens. If you've changed your lens in undesired ways, or just want to see those nifty animations again, use history to backtrack quickly to a previous state in your visualization.

### Limit the Size of Your Query Results

Interested in reviewing just the top 10 accounts in your product pipeline—without excessive scrolling? To fast-track to meaningful insights and for improved performance on your dashboards, you can limit the size of query results in a lens.

### View the Query Behind Your Lens

Analytics uses Salesforce Analytics Query Language (SAQL) behind the scenes in lenses and dashboards to gather data for visualizations. You can view and edit the underlying SAQL query being written as you explore or copy it for use elsewhere.

## **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

## **USER PERMISSIONS**

To view visualizations:

Use Analytics

## Clip a Lens to a Dashboard

To include the lens in a dashboard, clip it. When you clip the lens, Analytics adds the query as a step to the most recently used dashboard. If a dashboard isn't open, Analytics adds the step to a new dashboard in dashboard designer. After you add the step to the designer, you can apply it to a widget in the dashboard. The widget overrides the visualization settings of the lens—the widget determines how to display the results of the query.

## View Your Data in a Lens

When you look at data in an exploratory mode, you do so in a *lens*. A lens has several aspects: it's how you view data in a dataset, it's the place where you explore the data graphically, and it's the basis for building any dashboard.

From the home page, click a dataset or a lens. A lens opens in a new tab.

# **EDITIONS**

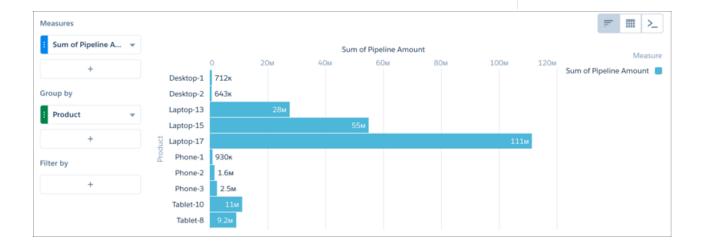
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## **Group Your Data into Categories**

Group data to organize it so that the data is displayed in useful categories.

For example, to look for seasonal patterns in your sales cycle, group opportunity data by the month when deals close.

- **1.** Explore a dataset containing opportunity stages, pipeline amounts, and dates, setting the measure to pipeline amount.
- 2. Click the **Vertical Axis** plus button, click the opportunity stage date, and then select month as the dimension that you want to group by.

The dimensions in your data determine which categories you can group by.

# EDITIONS

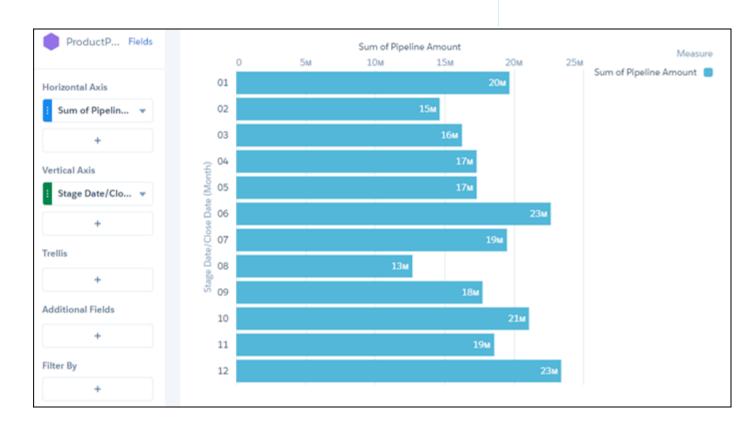
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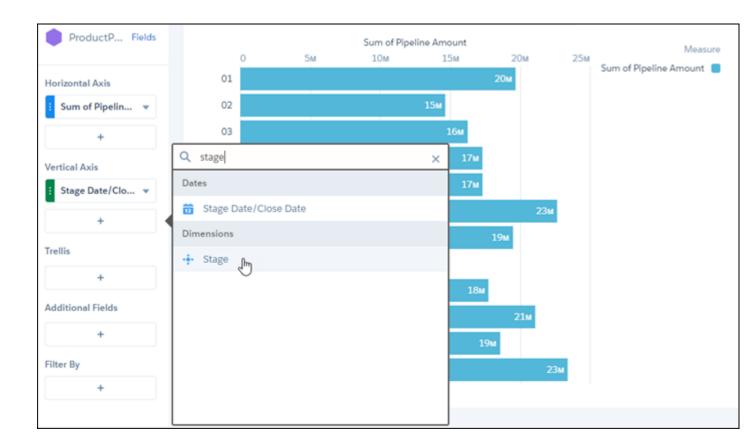
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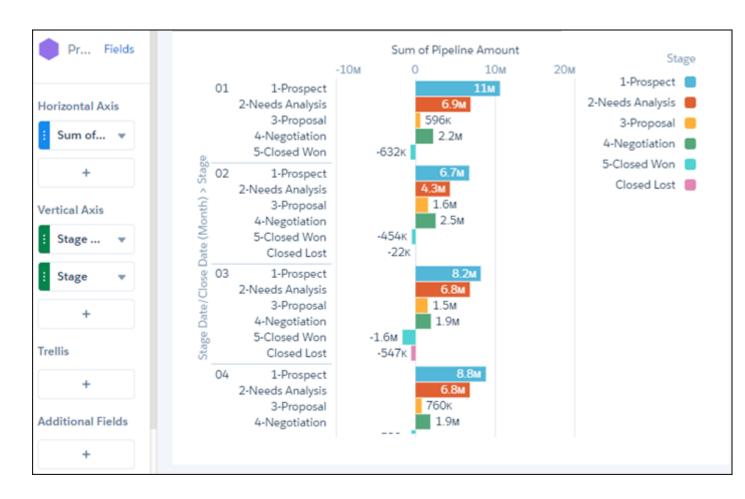


3. To find the second dimension that you want to group by, click the **Vertical Axis** plus button, then enter stage in the search field.

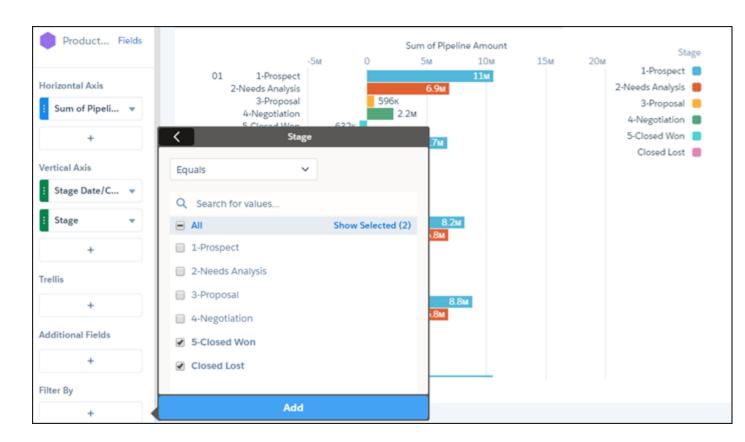


**4.** Click **Stage**, the second dimension you want to group by.

Pipeline amounts are shown grouped by stages, and stages are shown grouped by month. In this dataset, closed amounts are shown as negative numbers because those amounts fall out of the pipeline.



- **5.** Click the filters plus button, then click the stage dimension.
- **6.** Set the filter to equal the closed stages only.



The resulting bar chart shows the information you're after, but it's not easy to interpret.



7. Open the chart menu and select stacked waterfall.

The bar chart changes from a single bar to a waterfall chart that show the data grouped separately by month. It also provides an overall total for the year. You can now easily see how much each month has contributed in both lost and won closed deals.



Note: When a dimension is grouped, that dimension's null records are excluded from results, which affects the count of rows in a lens. To prevent the exclusion of null dimension records, assign a default value to those records.

### Filter Your Data

Apply filters in a lens to unclutter your chart and focus on the subset of data that's most relevant for your business unit, project, or management team. You can create partial filters on measures and dimensions. You can also create global lens filters on measures, dimensions, or dates and apply them to the compare table in a single step. Applying lens filters to the data also makes it easier for you to drill down or focus on specific datapoints.



🁔 Tip: Don't want filters to be applied to the dataset as you drill down? Then, define filters on individual measures, which don't persist. On the other hand, global lens filters are preserved when you switch to **View Details** or the values table.

Here's an example to limit the view of cities in sales territories to those with a substantial number of accounts.

- 1. Click the filters plus button.
  - In the filters dialog box, aggregated measures and measures are listed at the top, followed by dates and dimensions (the same ones available in the group-by panel).
- 2. In the filters dialog box, select the **Count of Rows** aggregated measure.

# **EDITIONS**

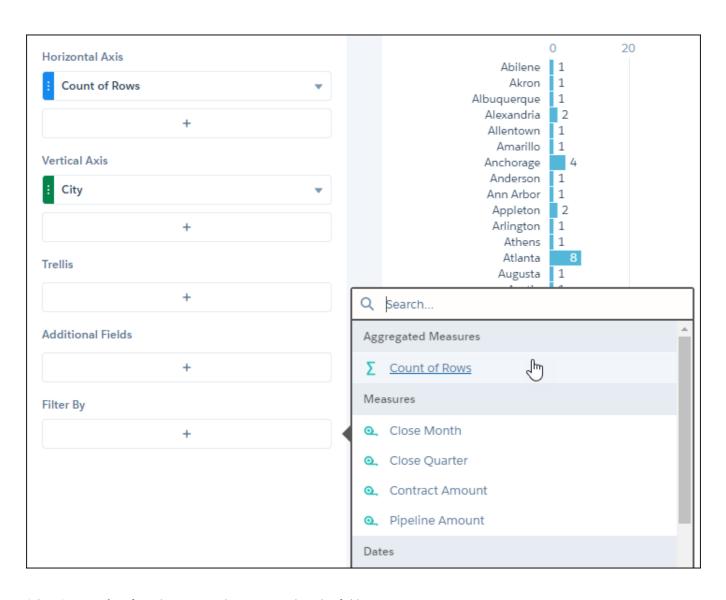
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## **USER PERMISSIONS**

To view visualizations:

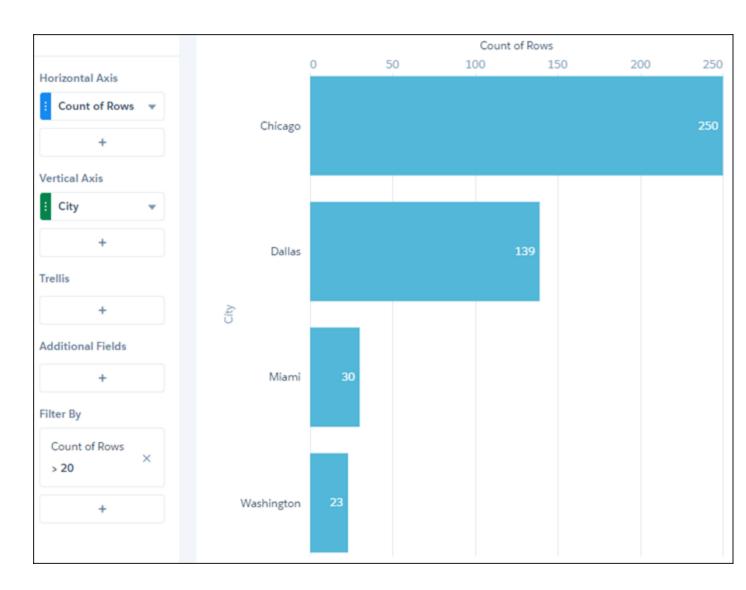
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**3.** Select **Greater Than** from the menu, and enter *20* in the value field.



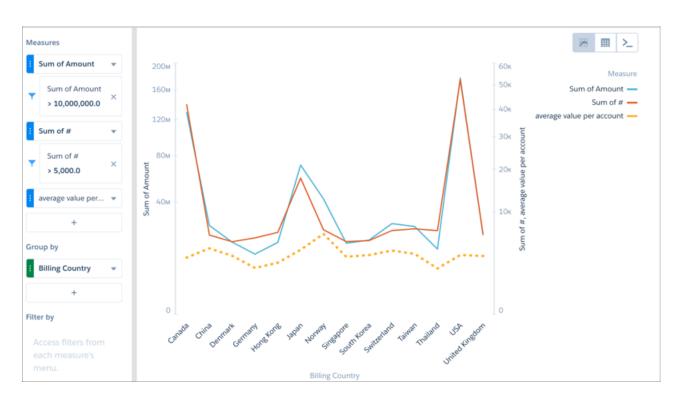
## 4. Click Add.



Normally, measure filters in multiple-column steps remain in the filter panel. However, in table mode, filters move to the measures to which they apply.



If a calculated column is created in table mode, then filters remain with their measures even if the lens is set to chart mode.



You can apply filters to new measures using their context menus.

## Change the Sort Order

Choose whether data in your chart visualization is sorted ascending, sorted descending, or unsorted.

1. Click the actions menu for the measure you want to sort.



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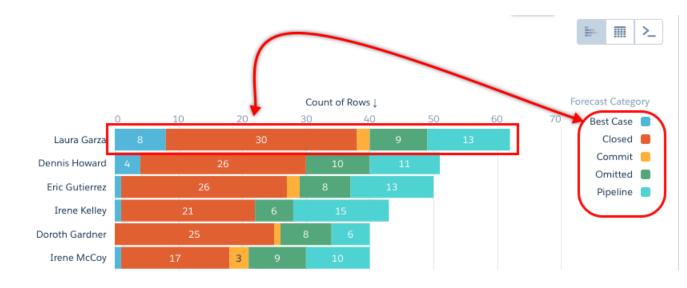


#### 2. Select Sort descending or Sort ascending.

If the measure is already sorted, you can unsort it by selecting **Clear sort**.

**Ø** 

**Note**: To show consistency across multiple bars in stacked charts, the stacked segments are always sorted alphabetically within each bar. Stacked charts include stacked bar, stacked column, stacked pyramid, and stacked waterfall. To help you locate a segment in a bar, the legend uses the same sort order as the bar segments.



#### SEE ALSO:

Tips for Working with Steps Created from the SAQL Editor

## Change the Chart Type

Switch between chart types to see which visualization options tell the most compelling story for your data.

1. Click the **Charts** icon ( ) in the quick access menu.

# EDITIONS

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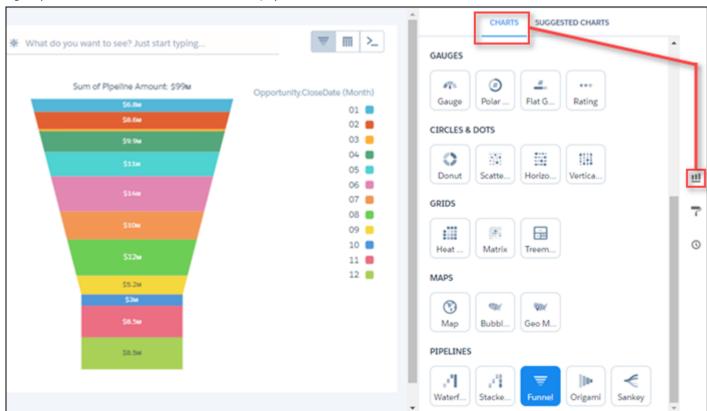
Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# USER PERMISSIONS

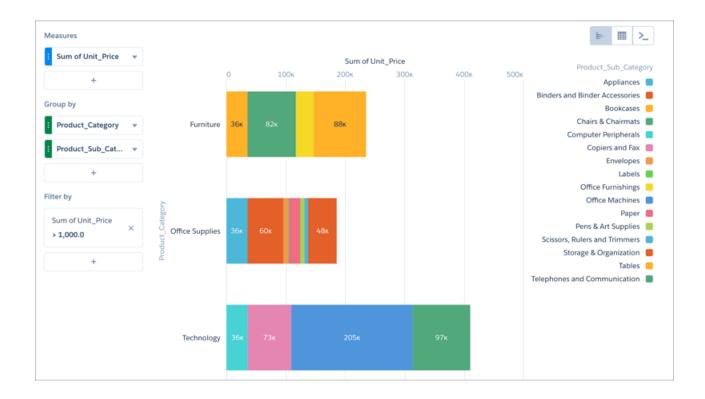
To view visualizations:

Use Analytics

A gallery of charts that are available for this lens is displayed.



- **2.** Hover over a chart type to see how many measures and dimensions that type of visualization requires. For example, a donut chart can have one measure and one or two dimensions.
- **3.** Click a chart type, such as Stacked Bar. The chart visualization changes.



### **Change Measures**

Your choice of measure defines your entire visualization and determines the scope of your exploration. For example, change the measure and the aggregation method from "Count of Opportunities" to "Sum of Amount." Then add a second measure to see 2 visualizations side by side.

- **1.** To explore it in a lens, click an Analytics dataset. By default, the initial measure is Count of Rows.
- 2. To open the Measures selection menu, click Count of Rows.

## **EDITIONS**

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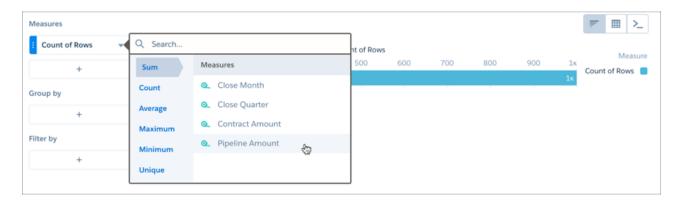
# USER PERMISSIONS

To view visualizations:

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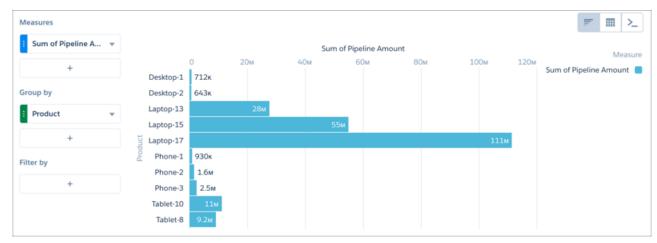


3. Click **Sum**, and click the measure you want to visualize.



Note: To count the number of unique occurrences of a measure or a dimension, click **Unique**, then select the measure or dimension you want to count.

After you group the data, the chart displays the chosen measure by group value.



## Drill Deeper Into Data

You can drill deeper into your data to explore the underlying information and surface hidden insights.

1. Select the data you want to drill into by clicking datapoints in a chart or rows in a table. For multiple selections, continue clicking, or click and drag to use a selection box. To deselect datapoints or rows, click them. To undo all selections, click the space just outside the datapoints or table.

Ø

Note: Drill selections are not available in values tables.

# **EDITIONS**

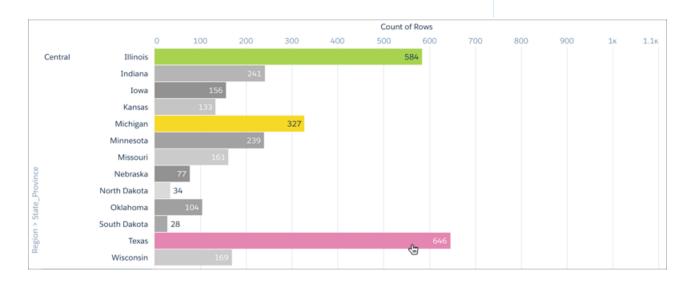
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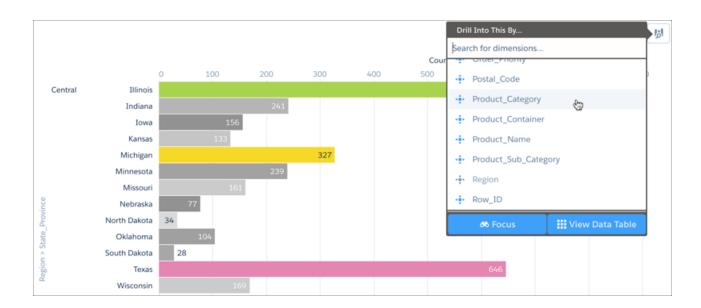
## **USER PERMISSIONS**

To view visualizations:

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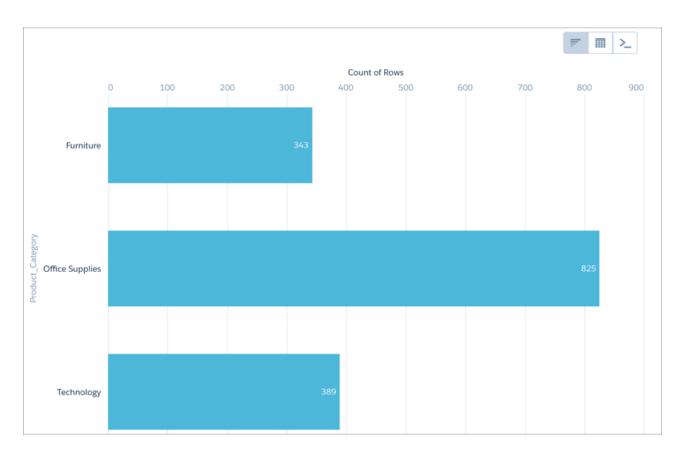


2. To open the Drill Into This By... menu, right-click the data or click



**3.** To view the underlying data for a dimension, select it from the Drill Into This By... menu.

A new visualization grouped by the selected dimension and filtered by the selected data appears in place of the previous visualization.



To return to the previous table or visualization, click

### Focus on Selected Data

You can focus your exploration by changing the view to include only specific data from an existing table or chart.

Select the data you want to focus on by clicking datapoints in a chart or rows in a table.
 For multiple selections, continue clicking, or click and drag to use a selection box. To deselect datapoints or rows, click them. To undo all selections, click the space just outside the datapoints or table.

Note: Focus selections are not available in values tables.

## **EDITIONS**

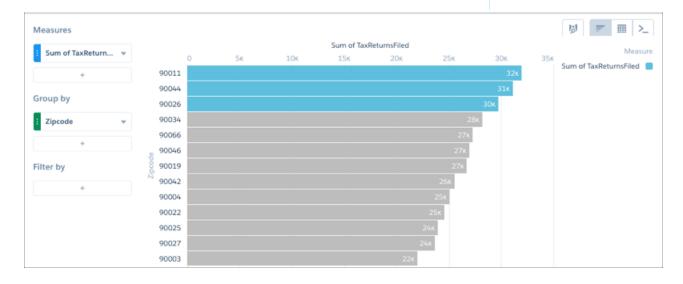
Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

## **USER PERMISSIONS**

To view visualizations:

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2. To open the Drill Into This By... menu, right-click the data or click



### **3.** To view only the selected data, click **Focus**.

A new table or visualization based on the selected data appears in place of the previous table or visualization.



To return to the previous table or visualization, click

# Change the Chart Scale

With some data, a chart displays values that range widely on an axis and make the visualization more difficult to understand. You can constrict the range's scale by applying a logarithmic scale. Scaling is available for certain charts only.

- **1.** To open the chart's properties, click **a**.
- 2. Open the panel for the vertical axis, and click Log Scale.
  Depending on the type of chart being used, the vertical axis, or y axis, could also be called the left or right axis.

# **EDITIONS**

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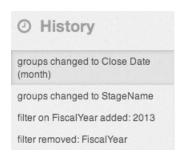
### Return to a Previous View by Using History

Exploring your data can lead you down many paths. Not all of them are fruitful, and that's OK. Explorer keeps a full history of your activity in a lens. If you've changed your lens in undesired ways, or just want to see those nifty animations again, use history to backtrack quickly to a previous state in your visualization.

1.

Click the **View History** button in the header.

A sidebar lists a history of all the actions that you've taken in the lens.



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To view visualizations:

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2. Select any item in the list to view the exploration at that point. Or use the undo and redo buttons (1) step backward and forward through the list.



### Limit the Size of Your Query Results

Interested in reviewing just the top 10 accounts in your product pipeline—without excessive scrolling? To fast-track to meaningful insights and for improved performance on your dashboards, you can limit the size of guery results in a lens.

- 1. To set the limit for your query, click the gear icon, and then select **Set Limit**.
- 2. Enter the size of the query result and click **Apply**.

If you edit your query in SAQL, you also need to set the query limit in SAQL.

Tip: For a smoother scrolling experience, we recommend using the query result limit along with a chart's auto-fit feature.

### **EDITIONS**

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### View the Query Behind Your Lens

Analytics uses Salesforce Analytics Query Language (SAQL) behind the scenes in lenses and dashboards to gather data for visualizations. You can view and edit the underlying SAQL query being written as you explore or copy it for use elsewhere.

1. Explore a dataset to get the visualization or table of data you want.

# **EDITIONS**

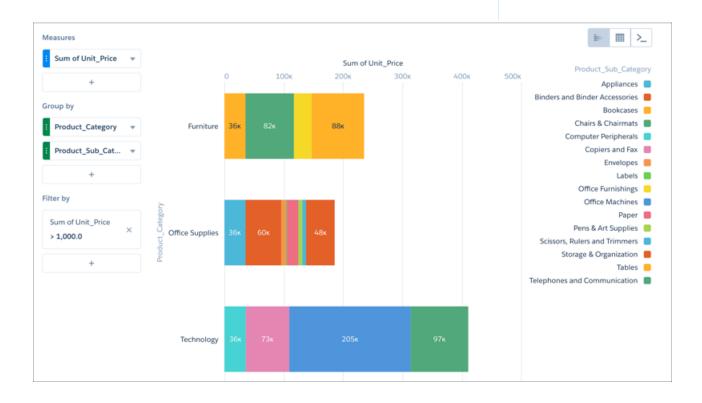
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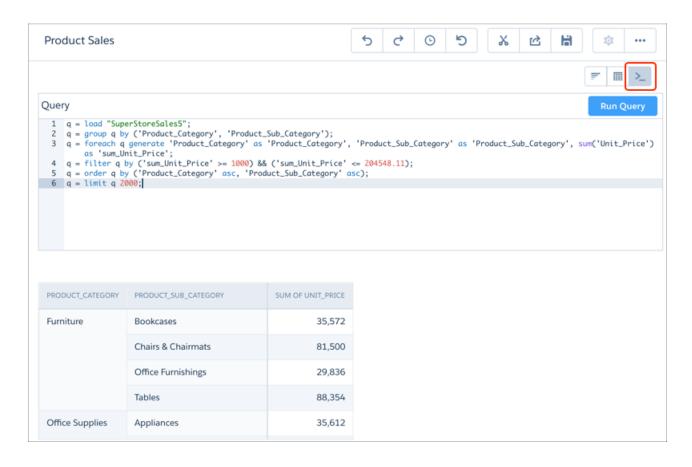
## **USER PERMISSIONS**

To view visualizations:

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**2.** Click SAQL mode to view the query's SAQL code.



**3.** To change the guery using SAQL, edit the SAQL and then click **Run Query**.

To work with multiple datasets in explorer simultaneously, reference them in the JSON editor for the currently running lens. Press Ctrl + E or Cmd + E to open the editor, and, use the load statement to load each dataset you want to explore.

Query results appear in a table below the SAQL editor.

If you run a SAQL query while exploring, the filters become read-only while in chart and table modes. To make the filters editable, click



Note: If you save the lens with filters in read-only mode, they will remain in read-only mode. Your exploration history is not saved with the lens and cannot be used to undo the read-only state.

For more information about SAQL, see the Analytics SAQL Reference.

## Clip a Lens to a Dashboard

To include the lens in a dashboard, clip it. When you clip the lens, Analytics adds the query as a step to the most recently used dashboard. If a dashboard isn't open, Analytics adds the step to a new dashboard in dashboard designer. After you add the step to the designer, you can apply it to a widget in the dashboard. The widget overrides the visualization settings of the lens—the widget determines how to display the results of the query.

- 1. Open the lens.
- 2. Click 🔏 .

Analytics creates a step based on query of the lens, and adds it to the step panel of the dashboard designer.

**3.** To save the step, save the dashboard.



Note: Changes to the step properties don't affect the lens.

# EDITIONS

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# **Explore Data with Tables**

You can use tables to get a view of the data that is close to the underlying dataset, and you can use tables to manipulate and extend the data to expose fresh insights. With values, compare, and pivot tables, Analytics explorer gives you options for both of those goals.

#### IN THIS SECTION:

#### Manage the View of Data in a Values Table

The values table displays all the columns in your dataset. You can customize the view of columns in a values table, and you can sort the row values using any column except for the index column.

#### Navigate Compare Table Columns

Create columns and navigate between existing ones using clicks or keystrokes.

#### Create Calculated Columns Using the Compare Table

Use the Compare Table to define custom formulas with columns of data. View measures side by side, and perform math across the table's columns and rows.

#### Window Functions Available in the Compare Table

The compare table's function menu provides UI-based access to useful window functions, saving you the time of having to write them in SAQL. Once you choose a function, you can edit the generated SAQL in the formula editor.

#### Use Raw Field Names in Explorer Formulas

When writing compare-table formulas, you can reference measure and group (dimension) columns by name. Referencing measure and group columns by name lets you write more intuitive and easily understandable formulas. Even better, the formula editor includes nifty function and formula pickers that save you time as you enter your SAQL formulas.

#### **Table Properties**

Use table properties to control a table's appearance.

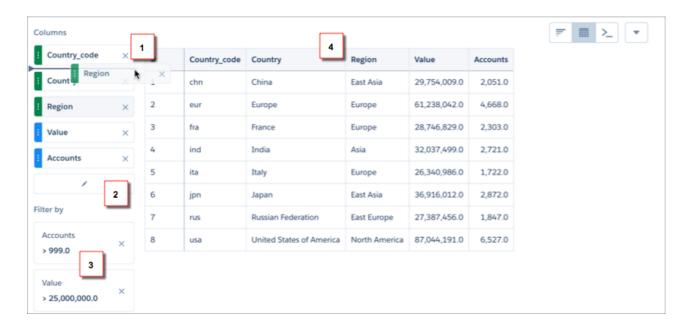
#### Column Properties

The Column Properties panel lets you jazz up the columns you want in compare tables and values tables. In addition to displaying data in the default text format, you can set measure column's data type as bar as well. For columns with text, you can specify text alignment and style.

## Manage the View of Data in a Values Table

The values table displays all the columns in your dataset. You can customize the view of columns in a values table, and you can sort the row values using any column except for the index column.

On the left-hand side of the values table are measure and dimension (grouping) tiles representing all the visible columns in your dataset. To move a measure or grouping, click and hold its tile, then drag the tile to a new position. Release the tile when the position indicator is in the correct position (1).

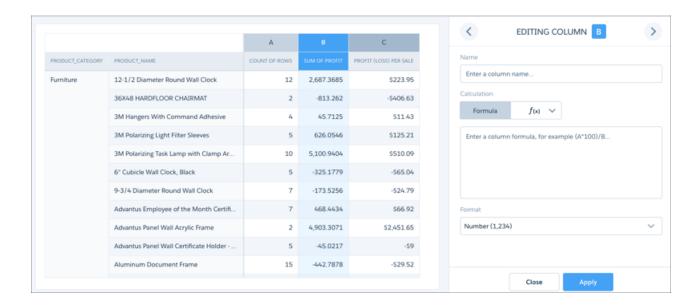


To remove a measure or grouping from the table, click the x button in its tile (1). To access the Edit Columns dialog, where you can hide or show any column, click the pencil button (2). You can also add, edit, or remove filters (3). To sort the rows by a column, click its heading cell until an arrow appears in the direction you want to sort (4).

### Navigate Compare Table Columns

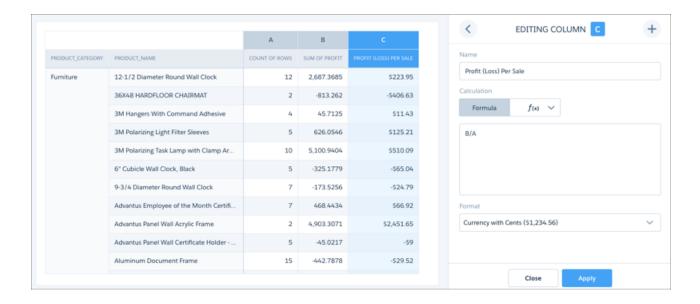
Create columns and navigate between existing ones using clicks or keystrokes.

You can navigate columns in the column editor using arrow buttons or your keyboard's left and right arrow keys.

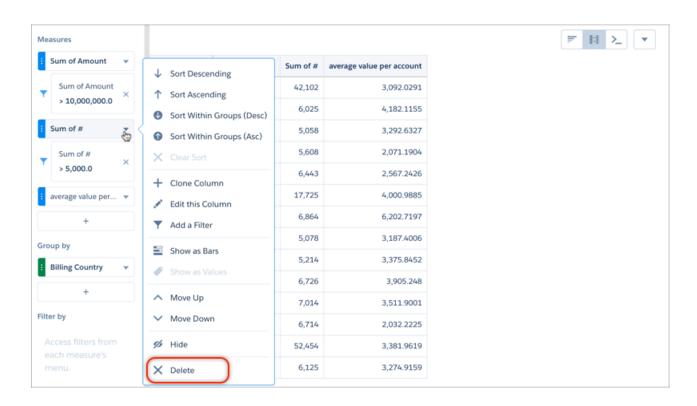


When you reach the right-most column, the right arrow button becomes an add-column button. You can click the add-column button or use your keyboard's Enter key to add a formula column.

Note: You can add up to 26 columns in the Compare Table.



You can also delete columns from the compare table by selecting **Delete** in the context of any measure or dimension.



Use the new **Close** button to exit the column editor without applying changes to the column.

## Create Calculated Columns Using the Compare Table

Use the Compare Table to define custom formulas with columns of data. View measures side by side, and perform math across the table's columns and rows.

1. Select **Compare Table** from the table type gallery.



- 2. Add dimensions by clicking + in the **Group by** panel.
  - Note: Null values that occur in the data are displayed as minus signs ("-").
- **3.** Change the first measure by clicking the initial selection ("Count of Rows"). Add more measures by clicking + in the **Measures** panel.

## **EDITIONS**

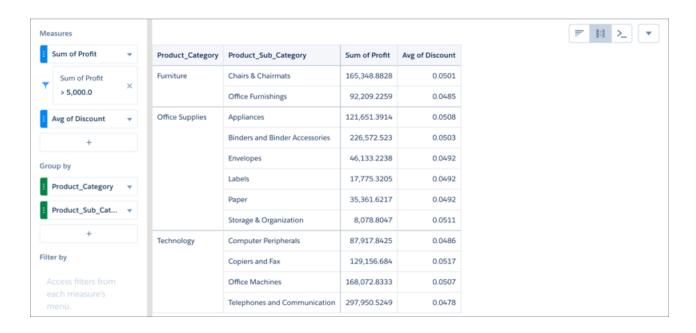
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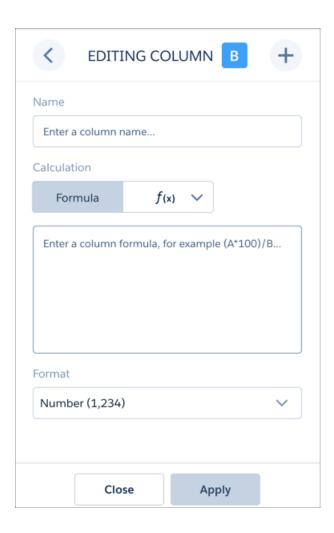
Use Analytics



**4.** To open the column's action menu, click the down arrow.



5. To open the column editor and enter a custom formula, select **Edit this Column** from a measure's action menu. If you want to preserve the original column, select **Clone Column** from the original column's action menu. You can edit the cloned column instead of the original.



In the column editor, you can enter SAQL formulas, including math functions, or choose a windowing function to calculate the values in the column. You can also name the column and choose a number format. If any of the formulas contain division by zero, the result is displayed as a minus sign ("-").

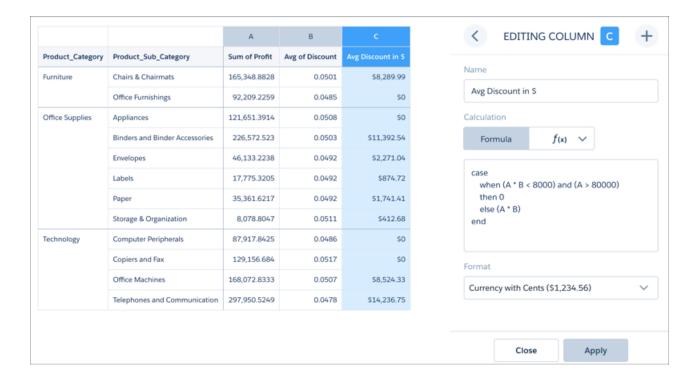
**6.** In the **Formula** field, create formulas using operators from this table.

| Symbol | Examples      | Calculation                          |
|--------|---------------|--------------------------------------|
| +      | A+B, A+100    | Addition, applied per row.           |
| -      | A-B, A-100    | Subtraction, applied per row.        |
| /      | A/B, A/100    | Division, applied per row.           |
| *      | A*B, A*100    | Multiplication, applied per row.     |
| ()     | (B-A)/(A*100) | Parentheses for grouping operations. |

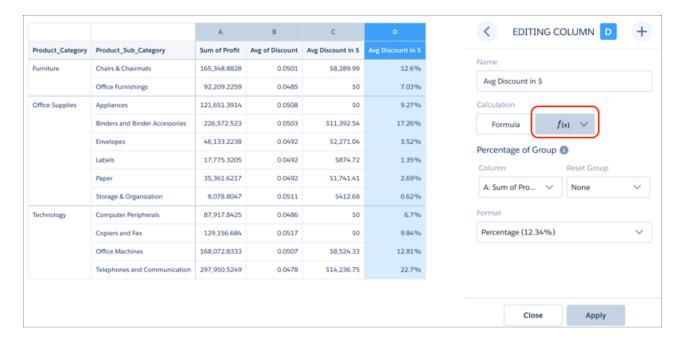
- Note: Dimension columns are on the left and measure columns are on the right. The measure columns are identified in formulas as A, B, C, and so on, with A being the far-left measure column.
- 7. To use SAQL, enter it directly into the formula editor, then click **Apply** to see the result.

See the Analytics SAQL Reference for more information on writing SAQL.

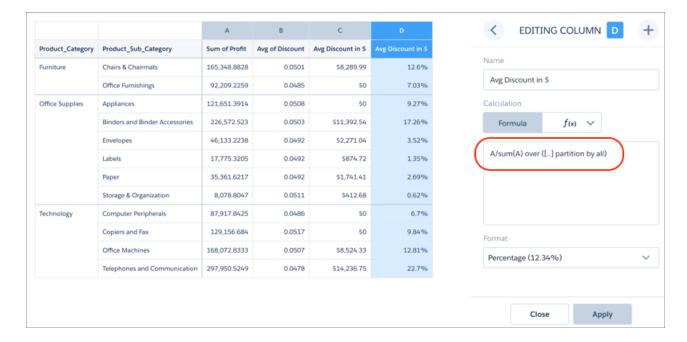
Note: Some SAQL functions cannot use letter references, such as A, B, C, etc., for columns. percentile\_desc and percentile\_cont functions, for example, require raw field names as arguments. See Use Raw Field Names in Explorer Formulas for more information.



**8.** To use a function, choose the function editor and then choose one of the windowing functions from the menu. After you configure the function, click **Apply** to see the result.



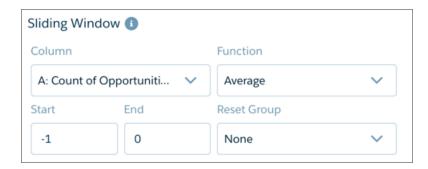
Switch to the formula editor to see the SAQL generated by the chosen function. You can edit the SAQL in the formula editor after generating it with a function as if you'd written it.



## Window Functions Available in the Compare Table

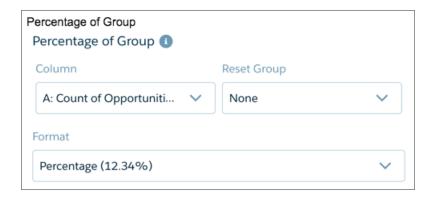
The compare table's function menu provides Ul-based access to useful window functions, saving you the time of having to write them in SAQL. Once you choose a function, you can edit the generated SAQL in the formula editor.

#### Sliding Window



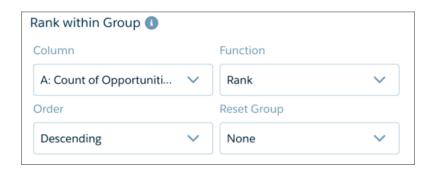
Applies an aggregate function to the current row with respect to a configurable range of rows. The function can be reset on a grouping defined in the table. Use the sliding window for calculating values such as running totals and moving average.

### Percentage of Group



Calculates the percentage each row is of its group total, or of the grand total. The function can be reset on a grouping defined in the table.

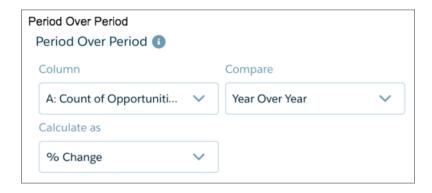
#### Rank Within Group



Provides rank, dense rank, cumulative distribution, and row-number functions. Ranking can be reset on a grouping defined in the table.

The Order menu determines the direction of ranking based on the values being ranked. Ascending ranks the lowest value as number 1, while descending ranks the highest value as number 1.

#### Period Over Period



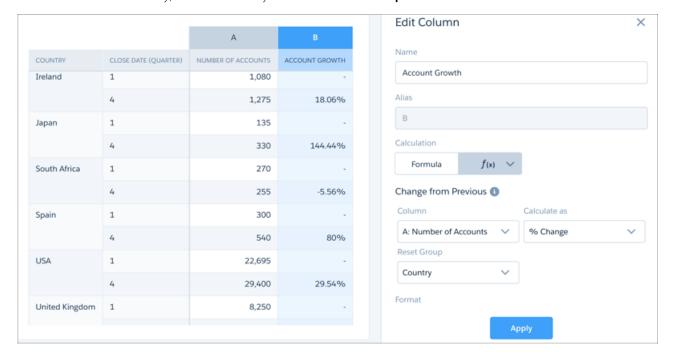
Compares periods of time to calculate changes in values. For example, year-over-year sales, or quarter-over-quarter closed opportunities, can be calculated by choosing the column and setting the granularity of the time period.



Always group data by year first, then (optionally) grouped by a finer granulation of time if available. Compound dates, if available, can be used directly with the period-over-period function. Examples of compound dates include "2016-01" (month of January 2016) and "2016-1" (first quarter of 2016). Comparisons can be shown as percentages or units.

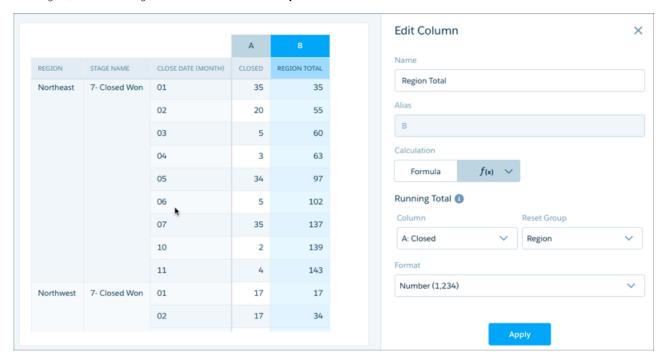
### **Change from Previous**

Compares the value of the current row with that of the previous row and calculates the difference. For example, to calculate the growth in number of accounts between the first and fourth quarters, choose the column showing number of accounts from **Column**. To restrict that calculation to each country, choose the country column from **Reset Group**.



#### **Running Total**

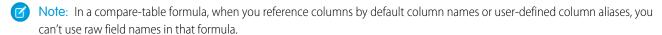
Calculates the total value of the current row summed with all previous rows. For example, to calculate the monthly total of closed opportunities as a running total, choose the column showing closed opportunities from **Column**. To calculate that running total within each region, choose the region column from **Reset Group**.



## Use Raw Field Names in Explorer Formulas

When writing compare-table formulas, you can reference measure and group (dimension) columns by name. Referencing measure and group columns by name lets you write more intuitive and easily understandable formulas. Even better, the formula editor includes nifty function and formula pickers that save you time as you enter your SAQL formulas.

You can use certain SAQL aggregate functions that require raw field names for arguments directly in the formula editor. These functions include percentile\_desc and percentile\_cont. You can also use the date function daysBetween in the formula editor.



Note: You can use the date functions year\_last\_day, quarter\_last\_day, week\_last\_day, quarter\_days, day\_in\_week, and day\_in\_quarter in the SAQL editor. Click \( \sum\_ \) to access the SAQL editor.

See these examples for how to use SAQL functions with raw-field references in the formula editor. Also see the *Analytics SAQL Reference* for more information on SAQL functions.

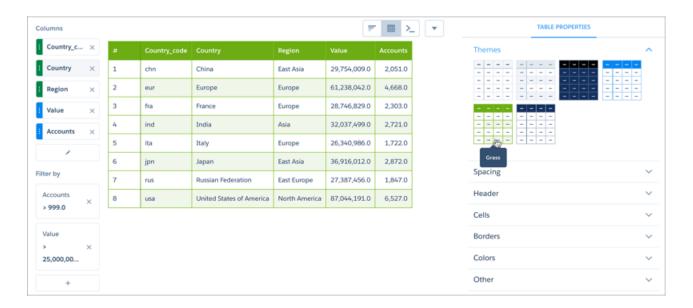
```
sum(Amount)/100
percentile_cont(0.95) within group (order by 'LoadTime' asc)
regr_slope(Amount,Closed_On_epoch)
daysBetween(toDate(last(ModifiedDate_epoch), "yyyy-MM-dd"), now())
coalesce(sum(Amount), 0)
len(first(Description))
```

# **Table Properties**

Use table properties to control a table's appearance.

#### Choose a Table Theme

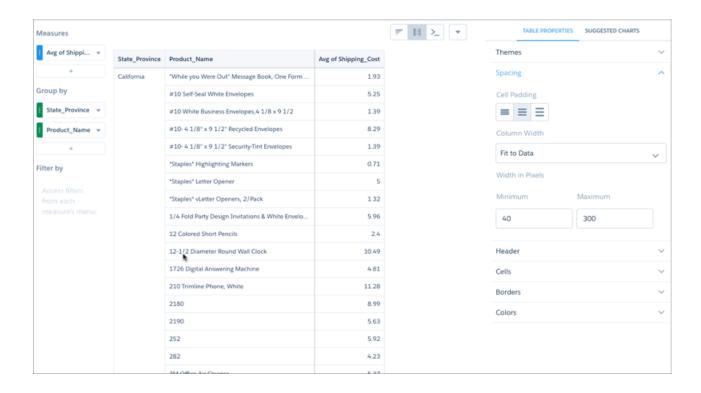
Click a theme to apply it to a table.



## Set the Spacing for Columns and Rows

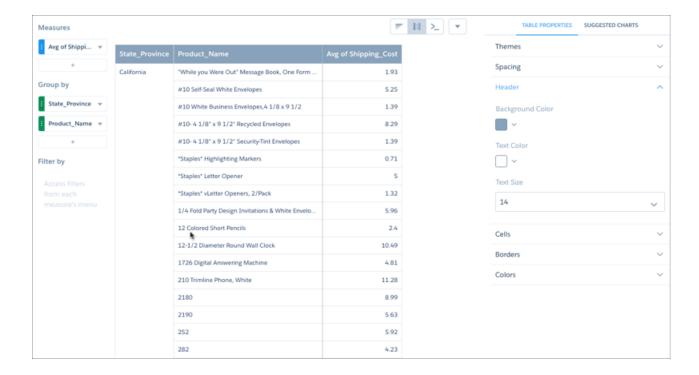
To increase or decrease the whitespace in all cells, click a Cell Padding tile.

To set column width, select an option from the **Column Width** drop-down menu, then enter a value or values in **Width in Pixels**. If you choose **Fit to Widget**, all columns are brought into view.



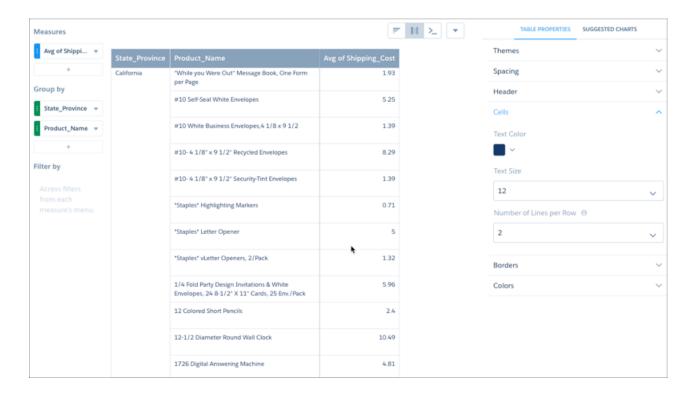
### Set Header Row Style

For the header row, you can set the cell background color, and the color and font size for text.



### Set Body Row Text Attributes

For body rows, you can set the font size and color for text, and the number of text lines each row displays.

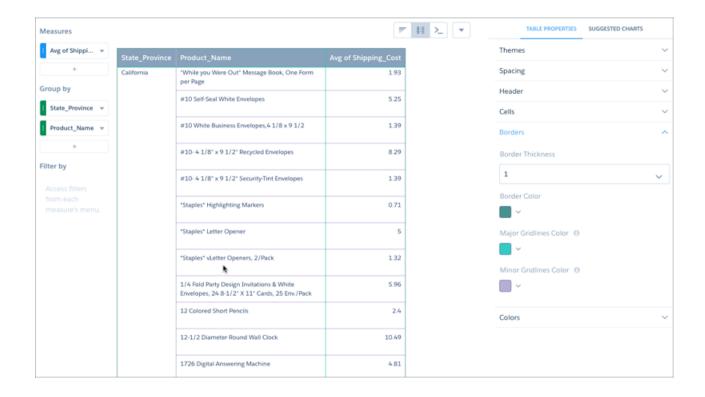




**Note**: The value you choose in the **Number of Lines per Row** drop-down menu does not affect text wrapping. It sets the number of lines each row displays regardless of the length of the text in each cell.

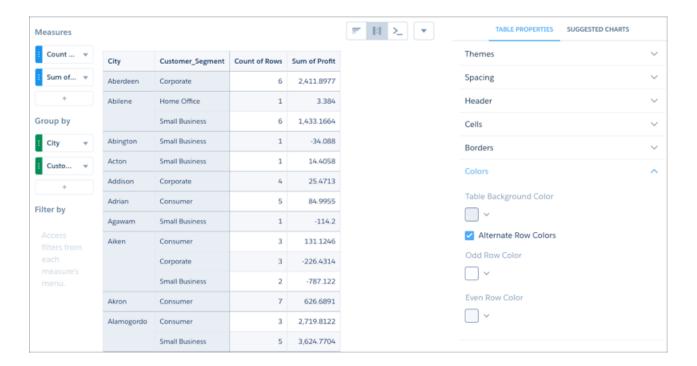
#### Set Border Styles

To style the table's external border, choose a thickness from **Border Thickness** and a color from **Border Color**. For the remaining cell borders, choose colors from **Major Gridlines Color** and **Minor Gridlines Color**.



## Choose Colors for Body Rows

To set a background color for body rows, choose a color from **Table Background Color**. To alternate row colors, click **Alternate Row Colors**, then choose colors for the odd and even rows.





Note: Rows in dimension columns retain the table background color even if you use alternate row colors.

#### Add an Index Column to Values Tables

To add or remove an index column from a values table, click **Show Row Index Column**.

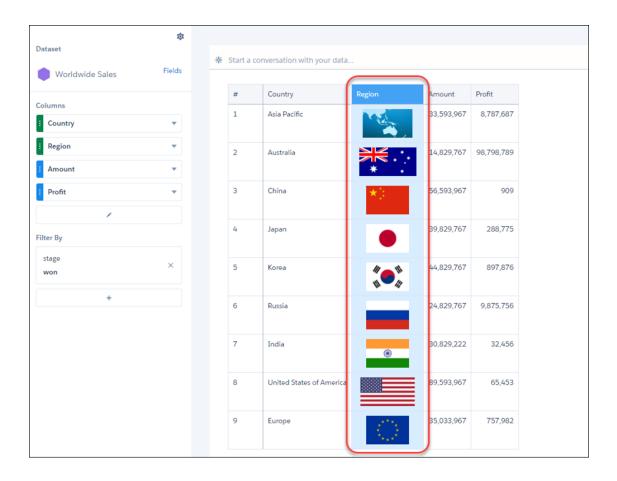


#### Dress Up Tables with Images

To add or remove an index column from a values table, click **Show Row Index Column**.

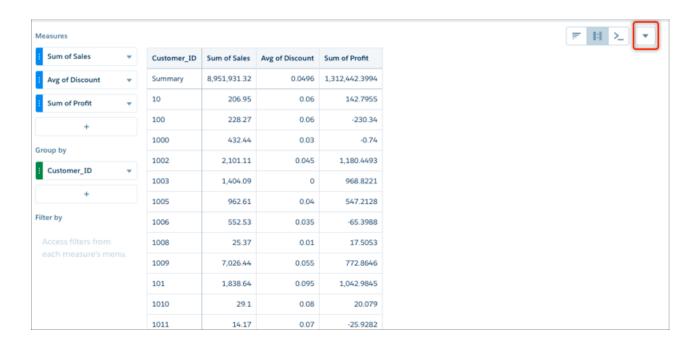
Include reps' Chatter profile pictures next to their KPIs in leaderboards. Or, add flags to your compare table showing worldwide sales data.

In the column you want to display images, include the Salesforce URLs that point to the images. In Column Properties, set the data type to **Image**. If you set the cell height or width for this column, we ensure that the images maintain their aspect ratio.



## Add a Summary Row

Values and compare tables can display column totals for measure columns. To display the summary row, select **Show Summary** from the Options menu.



To hide the summary row, select **Hide Summary** from the Options menu.

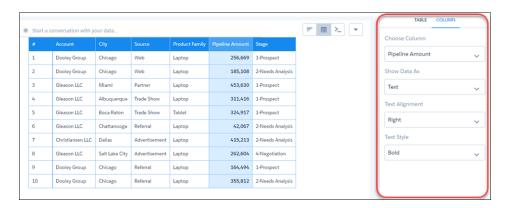


**Note:** Summary values are derived from the underlying dataset, which may not correspond to the data as displayed in the table. Whether a column total makes sense depends on the measure being totaled. In addition, if any filters have been set, summary values are derived from the filtered dataset.

### Column Properties

The Column Properties panel lets you jazz up the columns you want in compare tables and values tables. In addition to displaying data in the default text format, you can set measure column's data type as bar as well. For columns with text, you can specify text alignment and style.

To set a column's properties, select the column in the table or from the **Choose Column** list in Column Properties.



You can also get to the Column Properties panel from a column's context menu.

### Visualize Data With Charts

If your goal is to understand vast amounts of business data, and to communicate that understanding with coworkers, partners, and customers, being able to visualize your data is critical. Analytics provides a chart for every need, each a means for illustrating key aspects of your business in just the right way.

Analytics charts are integrated with the Analytics tools you already use to explore data. Start with a dataset, explore with a lens, clip it to dashboard designer, and create a stunning dashboard.

#### IN THIS SECTION:

#### **Customize Charts with Chart Properties**

To create the best visualizations for presenting your data, use chart properties to configure Analytics charts.

#### **Bar Charts**

Use a bar chart to provide a quick visual comparison of related values. Use a stacked bar chart to show groups within each bar.

#### Calendar Heat Map Charts

Calendar heat maps are useful for visualizing recurring discrete activities, such as closing accounts, over long periods of time. In this chart, you can easily change the granularity of the time-based grouping, such as from month to week or day.

#### Column Charts

Use a column chart (also called vertical bar chart) to show relative counts of things, such as leads or dollars. Use a stacked column chart to show groups within each bar.

#### Combo Charts

Use a combo chart to display two related series of data, such as discrete grouped values as vertical bars overlaid with a line chart representing an average value.

#### **Donut Charts**

Use a donut chart when you have a grouping and want to show not only the proportion of a single value for each group member against the total, but also the total amount itself. If you remove the donut's center by selecting **0%** from the **Center Size** menu, this visualization is commonly referred to as a pie chart.

#### **Dot Plot Charts**

Horizontal and vertical dot plots use the size and coloring of bubbles to display multiple dimensions and measures. Use dot plots to visualize related data to compare performance or locate unusual values.

#### **Funnel Charts**

Use a funnel chart to visualize sequential data that can be broken up into stages, such as a sales cycle.

#### **Gauge Charts**

Use gauge charts to track progress along a single measure, such as how much revenue has been realized versus the target.

#### Heat Maps

Use a heatmap to visually enhance high- and low-value data when there's a single measure and multiple dimensions.

#### Line Charts

Use a line chart when you have one important grouping representing an ordered set of data and one or more values to show.

#### Map Charts

Use a map if you have data with a geographical component that can shade areas in proportion to mapped values, allowing for visual pop-out of high-value areas. The map chart is found in the dashboard designer and classic designer.

#### **Bubble Map Charts**

Use a bubble map chart to visually indicate measure values in specified geographical areas.

## Geo Map Charts

Geo maps allow you to visualize data that contains geographical coordinates (latitude and longitude). Using coordinates allows you to place visual data elements more precisely on map charts.

### **Custom Map Charts**

Using map charts that can shade areas in proportion to mapped values allows for visual pop-out of high-value areas. You can use custom maps with geographical units or to illustrate any type of area that can be represented by polygons.

#### Matrix Charts

Use matrix charts to create a table that represents measures visually, allowing you to quickly spot extreme values.

### Origami Charts

Use an origami chart to create a striking horizontal visualization for easily identifying high- and low-value data when there's a single measure and a single grouping.

### **Parallel Coordinates Charts**

Use a parallel coordinates chart when you have multiple measures and a single grouping. Parallel coordinate charts are useful for displaying how data elements in a grouping stack up against each other.

### **Pyramid Charts**

Use a pyramid chart to visually highlight relative sizes of stacked dimension values.

#### Radar Charts

Use radar charts to display a small dataset with one dimension and at least three measure columns.

#### Rating Charts

Use a rating chart to get a sense of how well a measured quality, such as customer satisfaction, is meeting expectations.

### Sankey Charts

Use a sankey chart to visualize the distribution of a measure from one grouping to another grouping.

### Scatter Charts

Use a scatter chart to visualize correlation between two groups of data.

#### **Timeline Charts**

A timeline chart is a line chart with one axis dedicated to a time dimension. Use a timeline chart to show how a value changes over time.

### Time Bar Charts

A time bar chart is a column chart with the horizontal axis showing a time dimension. Use a time bar chart to visualize changes over time with vertical bars, which is a great way to illustrate relative changes over time and highlight missing data.

### Time Combo Charts

A time combo chart shows two measures over time—one on a timeline and the other on a time bar. You can display both charts on the same or separate axes.

### Treemap Charts

Use treemaps to visualize hierarchical quantitative data, where containing rectangles designate relationship using color, and "leaf" rectangles represent quantity using area.

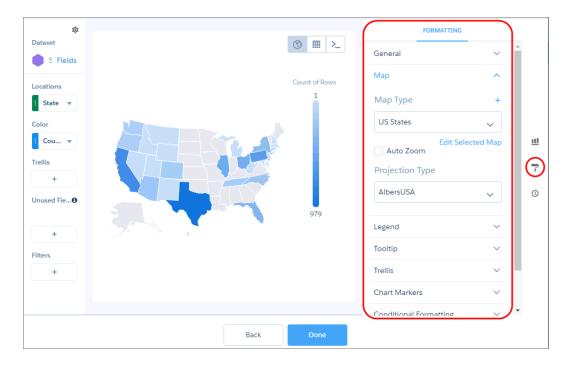
#### Waterfall Charts

Use a waterfall chart to show the cumulative effect of sequentially introduced positive or negative values with breakdowns of value totals. Also known as "flying bricks" or "Mario" charts. To include breakdowns of value totals, use a stacked waterfall chart.

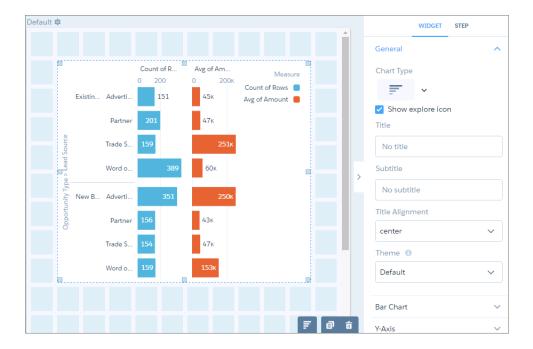
## **Customize Charts with Chart Properties**

To create the best visualizations for presenting your data, use chart properties to configure Analytics charts.

To display the chart properties in the explorer, click  $extbf{7}$ . The chart properties appear in the right panel and are grouped into sections. The properties differ based on the chart type. Properties that are unique to a chart type are grouped in their own section. For example, the map chart has the "Map" section.



If you add a chart to a dashboard, edit the dashboard and select the chart widget in the dashboard designer to change the chart properties for the widget.



Or, to change the chart properties at the step level, double-click the widget in the dashboard designer (which opens the step in the explorer) and click 7. If the step powers multiple charts in the dashboard, changes to the chart properties at the step level only affect chart that you double-clicked.

#### IN THIS SECTION:

## Use a Suggested Chart to Display Results

Using a sophisticated algorithm that analyzes your lens's composition, explorer suggests chart types that can better communicate the essential message your data is communicating.

### Show Each Measure on a Separate Set of Axes

Charts that display multiple measures are sometimes hard to read. To fix that, display each measure separately.

### Automatically Highlight Data with Conditional Formatting

Don't delay important decisions because you miss critical changes in your data. With clicks, not code, add rules to automatically format results to quickly catch changes and take immediate action. For example, highlight accounts in red in a bar chart when their CSAT score drops below 80% so that you can get on the phone with those customers.

#### Set a Custom Domain to Focus the Results

If the domain on the chart is too large, chart elements can be difficult to view, like the bars in this chart.

#### Fill the Area Between Lines

You can shade the area between lines in line and timeline charts to accentuate the spread between two measures.

#### Use Dashed Lines for Effect

To differentiate a measure in a line or timeline chart, use a dashed line.

### Handle Missing Values in Line Charts

Charts can display gaps to highlight missing data. Or charts can ignore the missing data and show a continuous line that connects the data points. For periods of missing data in timeline charts, you can make cumulative lines horizontal to indicate that no change occurs.

### Add Multiple Reference Lines to Charts

You can use any number of reference lines to mark up a chart, such as when you indicate points of reference on a timeline before and after a predictive line.

## Annotate Data Points with Tooltips and Markers

Create your own tooltips and markers in charts to show details about data points. Create a tooltip to specify which details appear when you hover over any data point. To annotate a specific data point, add a marker and, to draw more attention, make it blink.

#### Compare Results for Different Groups with Trellis

Enable trellis on a chart to display a separate chart for each group. Because the charts in a trellis have the same scale, you can quickly compare results across all groups.

## Add Icons to Analytics Charts

Bar charts (but not stacked bars), dot-plot charts, and line charts can have icons along with dimension values as labels. Polar gauge charts can include icons in their centers.

### SEE ALSO:

Widget Properties for Analytics Dashboards

# Use a Suggested Chart to Display Results

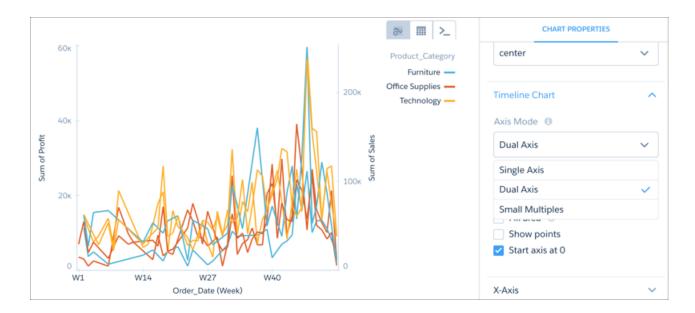
Using a sophisticated algorithm that analyzes your lens's composition, explorer suggests chart types that can better communicate the essential message your data is communicating.

To view suggested charts, click the gear menu in chart mode, then click **Suggested Charts**.

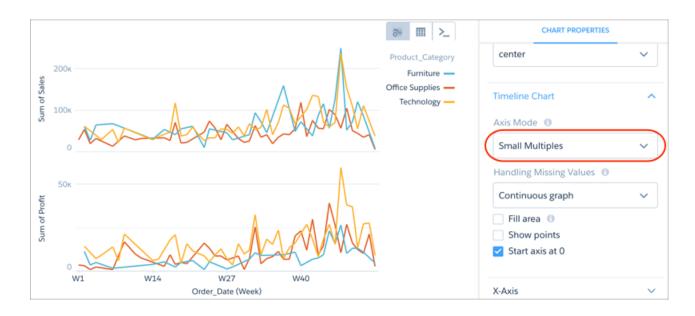


# Show Each Measure on a Separate Set of Axes

Charts that display multiple measures are sometimes hard to read. To fix that, display each measure separately.



Select **Small Multiples** from Axis Mode to separate the measures and make the chart easier to understand.



Tip: While viewing the dashboard, click the title of a measure axis to sort the results. Each click cycles through the sort order options: ascending, descending, and alphabetical. You can use this method to sort all charts with measure axes, except scatterplot or charts that also have a time axis.

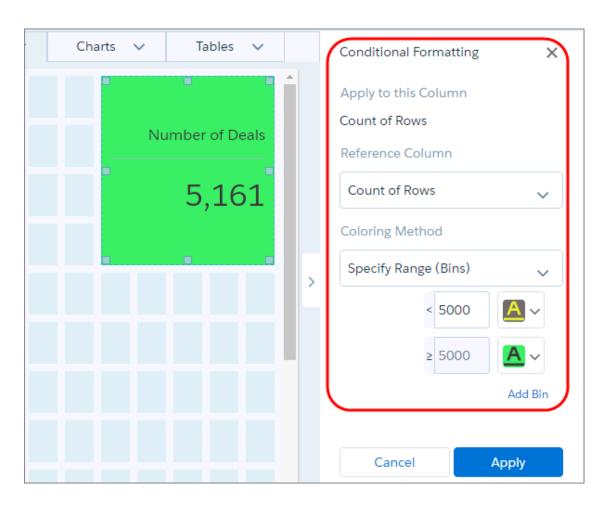
## Automatically Highlight Data with Conditional Formatting

Don't delay important decisions because you miss critical changes in your data. With clicks, not code, add rules to automatically format results to quickly catch changes and take immediate action. For example, highlight accounts in red in a bar chart when their CSAT score drops below 80% so that you can get on the phone with those customers.

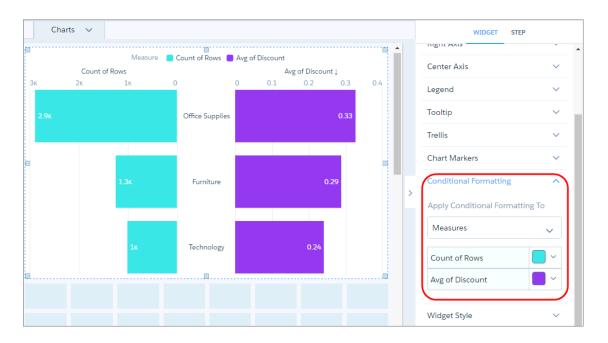
Use rules to automatically highlight charts, tables, and number widgets in your dashboard. Stay on top of each KPI by highlighting the highs and lows based on ranges and colors that you specify. Or, distinguish each measure or dimension value (group) by color-coding them.

For example, you can apply conditional formatting to accomplish the following goals.

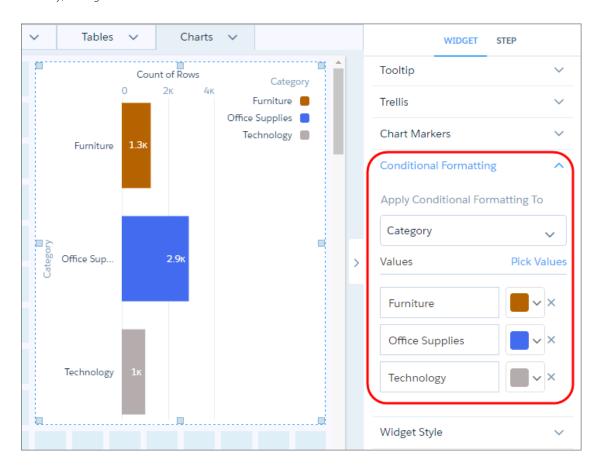
• Determine how well you're doing on a KPI by coloring the number widget based on its value.



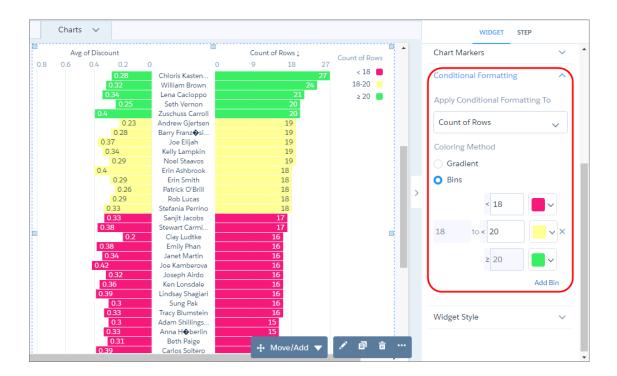
• Distinguish each measure in a chart with a unique color. (You can also uniquely color each dimension value.)



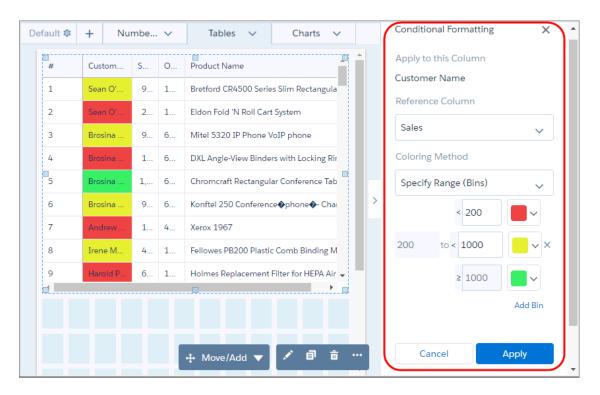
• Similarly, distinguish each dimension value.



• Determine your top and bottom performers by categorizing numeric values into colored bins. You can add up to 10 bins.

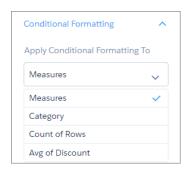


• Focus on key table records by color-coding the text or background of a column's cells. In the following example, the Customer Name column is colored based on the value of the Sales field.

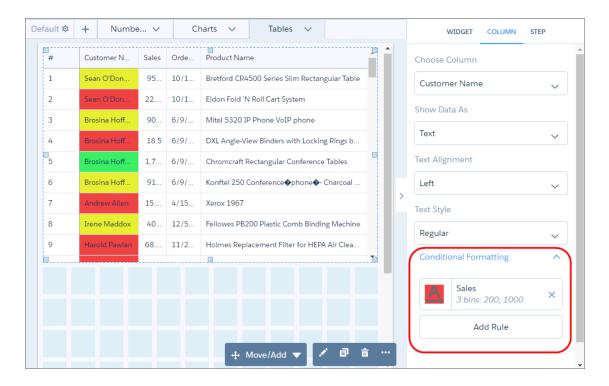


Set up conditional formatting in the widget properties panel. The formatting applies to the underlying step and is retained if you change the widget or chart type. A message appears if the formatting can't be retained, like when changing between a table and chart widget. Conditional formatting overrides colors set on dimension values in the dataset XMD.

For charts and number widgets, set up conditional formatting in the widget properties. Select **Measures** to apply a format to each measure. Or select one measure or dimension to apply a format to each of its values. Each chart or number widget can have one conditional formatting rule.



For tables, in the Column tab of the widget properties, select the column that you want to format and then set the rule used to format it. Each table can have multiple conditional formatting rules. You can apply only one rule for each style, like background color or text color in a table.



Consider the following limitations when setting up conditional formatting.

- You can't apply conditional formatting to a step that contains a period (.) in the step ID.
- Conditional formatting is removed if you manually change the step ID or dev column name in the dashboard JSON or SAQL, and save the dashboard or clip the lens to a dashboard.
- Conditional formatting set in the widget properties doesn't appear in the dashboard JSON. Any conditional formatting previously set up in the dashboard JSON is retained.

### IN THIS SECTION:

### Set Up Complex Conditional Formatting

You can set up conditions based on a single reference column in the widget properties. However, sometimes, you have to create more complex conditions. To set up rules based on multiple reference columns for number and table widgets, use SAQL.

## Set Up Complex Conditional Formatting

You can set up conditions based on a single reference column in the widget properties. However, sometimes, you have to create more complex conditions. To set up rules based on multiple reference columns for number and table widgets, use SAQL.

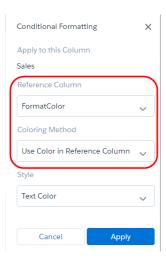
1. Set up the conditions in the SAQL query. Define the rules and output the colors to a new column. Specify the colors in hex codes (like #CCCC00) or RGB codes (like rgb(255,255,255) or rgba(255,255,255,0)).

For example, the following query specifies the rule and outputs the hex color code for each condition in the "FormatColor" column.

```
"query": "q = load \"Sample Superstore with Goals\";\n
   result = group q by 'Segment'; \n
   result = foreach result generate
       q.'Segment' as 'Segment',
       sum(q.'Discount') as 'Discount',
       sum(q.'Profit') as 'Profit',
       sum(q.'Quantity') as 'Quantity',
       sum(q.'Sales') as 'Sales',
        (case
           when Segment == \"Consumer\" and sum(q.'Discount') >= 1000 then \"#008000\"
           when Segment == \"Consumer\" and sum(q.'Discount') < 1000 then \"#CCCC00\"
           when Segment == \"Corporate\" and sum(q.'Discount') >= 500 then \"#008000\"
           when Segment == \"Corporate\" and sum(q.'Discount') < 500 then \"#CCCC00\"
          when Segment == \"Home Office\" and sum(q.'Discount') >= 200 then \"#008000\"
          when Segment == \"Home Office\" and sum(q.'Discount') < 200 then \"#CCCC00\"
            else \"#000000\" end) as 'FormatColor'; \n
   result = order result by ('Sales' desc); \n
   result = limit result 2000;",
```

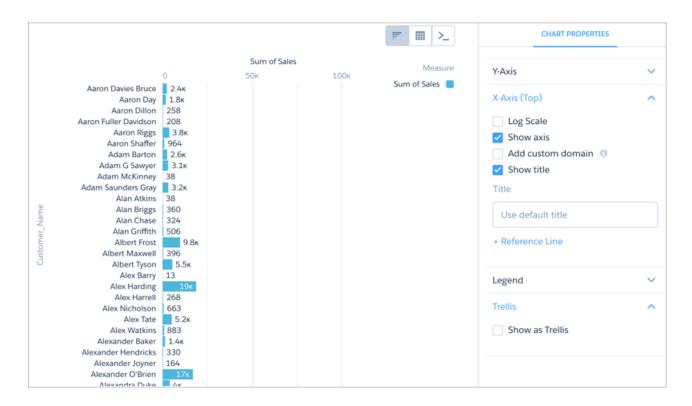
**2.** To apply the text color to the Sales table column, select the new color column ("FormatColor") in the Reference Column widget property and then select **Use Color in Reference Column** in the Coloring Method option.

The following example conditionally colors the text in the Sales table column based on the logic used to determine the color in the "FormatColor" reference column.

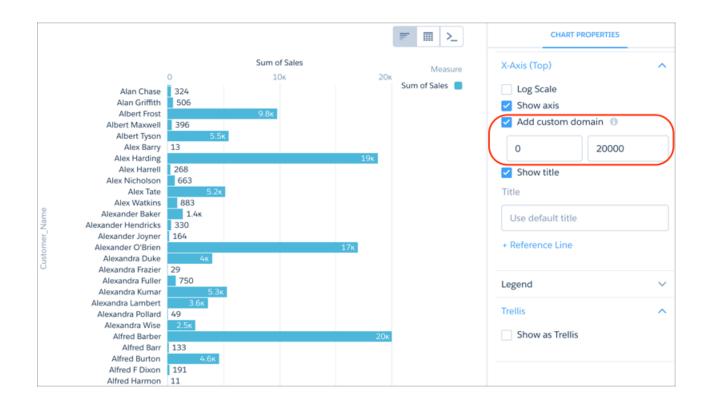


## Set a Custom Domain to Focus the Results

If the domain on the chart is too large, chart elements can be difficult to view, like the bars in this chart.



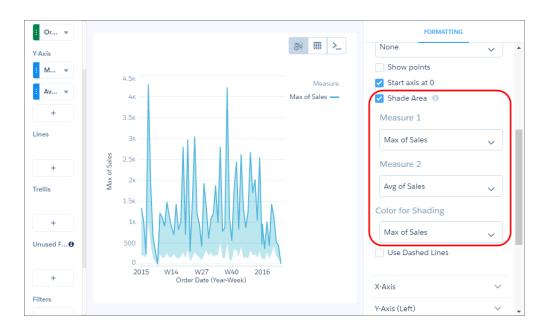
Set a custom domain to restrict the view to values that bring smaller values into view. Click **Add custom domain**, then set the domain's bounds be entering minimum and maximum values.



## Fill the Area Between Lines

You can shade the area between lines in line and timeline charts to accentuate the spread between two measures.

To show the spread between minimum and maximum values of closed opportunities in a timeline chart, for example, click **Shade Area**. Then choose the measures from the **Measure 1** and **Measure 2** menus, and pick a color for the shading from **Color for Shading**.



To focus on the shading, and not the lines, the chart hides the lines and legend for measures specified in **Measure 1** and **Measure 2**, unless you select them in the **Color of Shading** field.

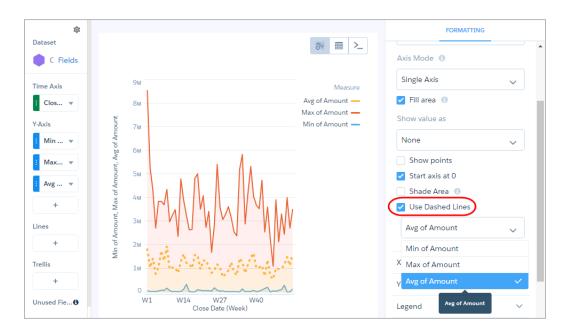


**Note**: The colors of the measures are based on the theme in the legend. The measure colors can change when you select the shade color or if lines are removed from the chart.

### Use Dashed Lines for Effect

To differentiate a measure in a line or timeline chart, use a dashed line.

To contrast the line representing the average between the minimum and maximum values of closed opportunities in a timeline chart, for example, click **Use Dashed Lines**, then choose the measure for the average from the multiselect menu below it.



To make other measure lines dashed instead of solid, select them from the same menu.

## Handle Missing Values in Line Charts

Charts can display gaps to highlight missing data. Or charts can ignore the missing data and show a continuous line that connects the data points. For periods of missing data in timeline charts, you can make cumulative lines horizontal to indicate that no change occurs.

To configure how a chart handles missing data, set one of the following options in the Missing Value chart property.

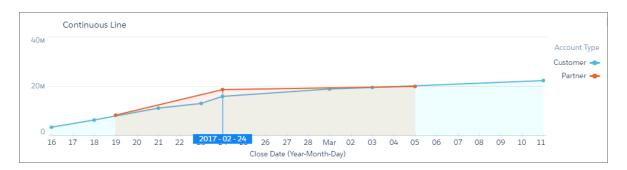
## Show as gaps

The graph connects contiguous data points and shows gaps whenever data is missing. In the following example, there's a separate graph for customer and partner account types.



## Ignore, show continuous line

The graph connects all data points, glossing over missing data. The graph starts at the first data point and ends at the last for each grouping.



### Use prior values

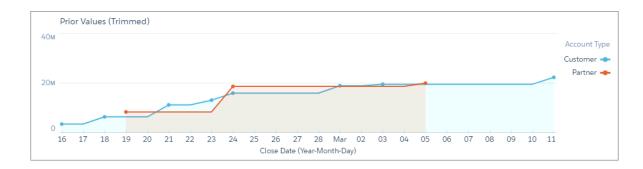
Uses the value prior to the missing data point to indicate no change. Use this option for charts that show cumulative values, such as timeline.

Let's look at an example. Because no deals closed between February 20 and 23, the cumulative value doesn't change for the partner line. To show no change, the chart uses the same value from the previous data point on February 19. This chart is more accurate than the previous graph, which is misleading because it shows an upward trend during this same time period.



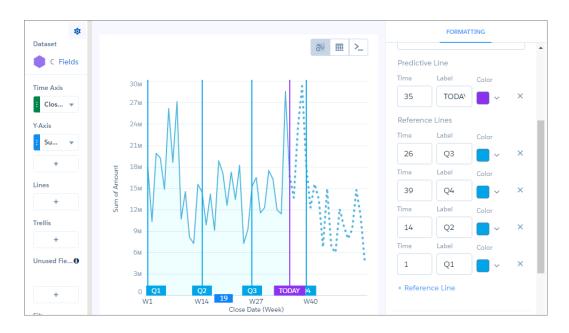
## Use prior values (trimmed)

The graph ends at the last data point. For instance, looking at the following example, this graph is the same as the Use Prior Values graph, except that it's truncated on the right because there's no data after March 5.



# Add Multiple Reference Lines to Charts

You can use any number of reference lines to mark up a chart, such as when you indicate points of reference on a timeline before and after a predictive line.



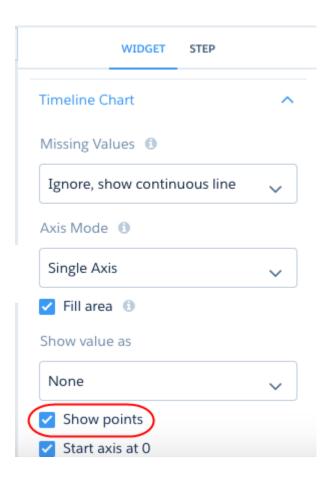
# Annotate Data Points with Tooltips and Markers

Create your own tooltips and markers in charts to show details about data points. Create a tooltip to specify which details appear when you hover over any data point. To annotate a specific data point, add a marker and, to draw more attention, make it blink.

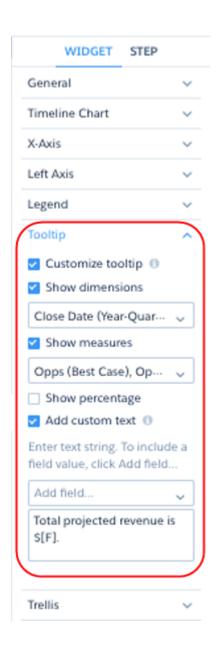
The tooltips and markers appear when you hover over the data point.



- 1. Edit the dashboard and select the chart widget.
- 2. To make it easier for users to locate data points on the line, select **Show points**.



**3.** To add a tooltip, which appears for all data points, expand the Tooltip section of the widget properties.

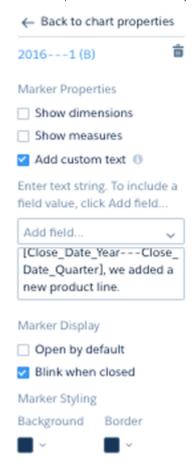


# **4.** Enter the following tooltip details.

| Property          | Description  |
|-------------------|--|
| Customize tooltip | Shows a tooltip when you hover over any data point in the chart. The tooltip can show your own text and the values of measures and dimensions. |
| Show dimensions   | Shows the values of all selected dimensions.   |
| Show measures     | Shows the values of all selected measures.   |
| Show percentage   | If you show measures, enable this option to show each measure's percentage of the total.   |

| Property        | Description  |
|-----------------|--|
| Add custom text | Specify your own text. To insert the value of a field in the text, click <b>Add field</b> . If manually entering a field, reference the field by its alias (not label) and enclose the alias in square brackets. |

- 5. To add a marker for a data point, expand the Chart Markers section in the widget properties, and then click **Edit Chart Markers**.
- **6.** Select a data point in the chart where you want to add a marker.



7. Enter the following marker details.

| Property        | Description  |
|-----------------|--|
| Show dimensions | Shows the values of all selected dimensions.   |
| Show measures   | Shows the values of all selected measures.   |
| Add custom text | Specify your own text. To insert the value of a field in the text, click <b>Add field</b> . If manually entering a field, reference the field by its alias (not label) and enclose the alias in square brackets. |
| Open by default | Opens the marker and shows its text, by default. Otherwise, the dashboard viewer must click the marker to view the text.   |

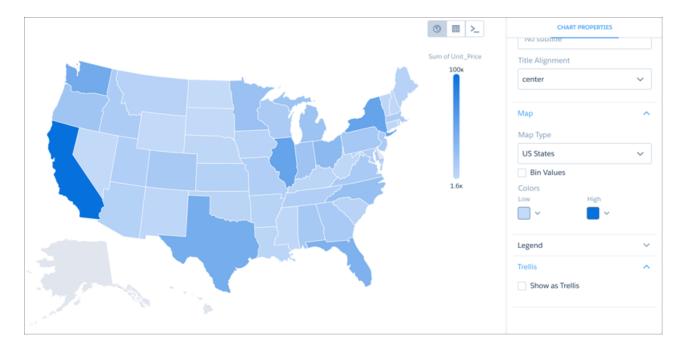
| Property          | Description                              |
|-------------------|--|
| Blink when closed | Makes the marker blink when it's closed. |
| Background        | Background color of the marker.          |
| Border            | Border color of the marker.              |

- **8.** Preview the changes.
- **9.** Save the dashboard.

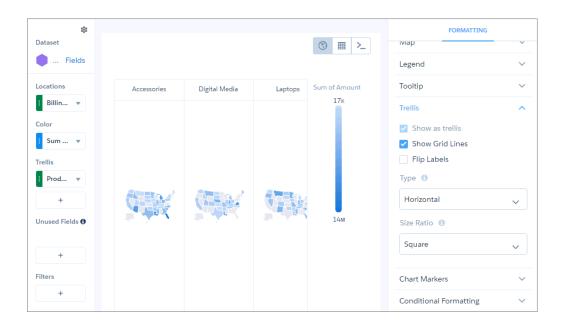
# Compare Results for Different Groups with Trellis

Enable trellis on a chart to display a separate chart for each group. Because the charts in a trellis have the same scale, you can quickly compare results across all groups.

Regular map charts, for example, can display one grouping. This map of the United States shows a sum grouped by state.



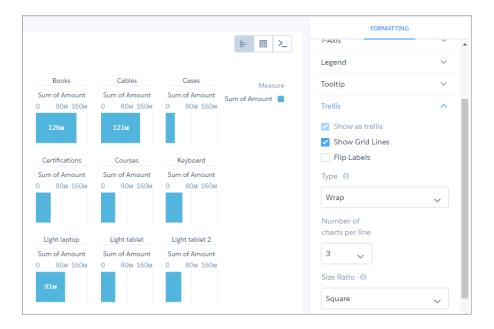
In trellis view, more groupings can be added. This trellis of maps of the United States shows a sum grouped by billing state *and* by product.



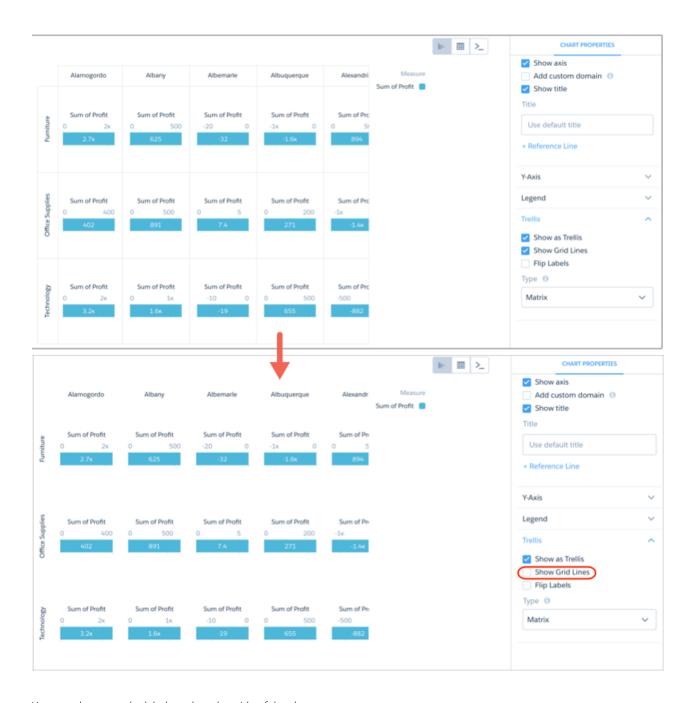
Trellis view can also be used to visualize values that may otherwise be difficult to see in a chart. For example, some of the values shown by this stacked bar chart are difficult to pick out.



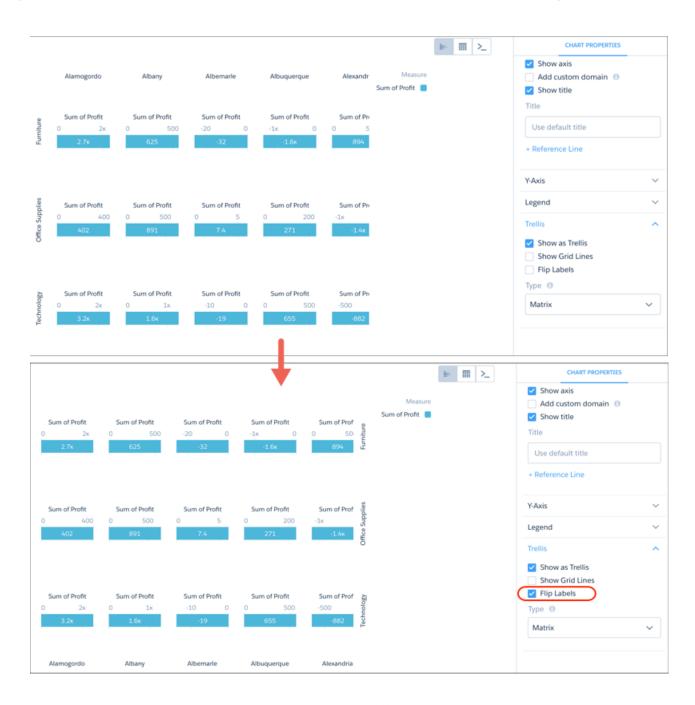
By using trellis view, you can separate the values so that smaller values can be picked out more easily.



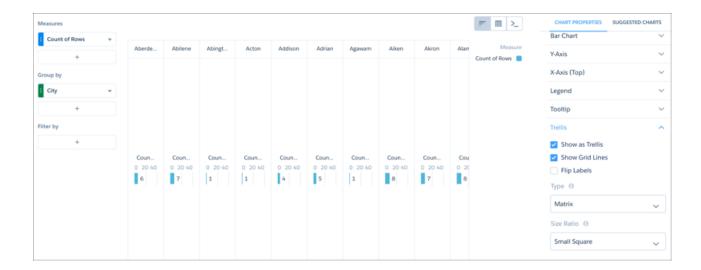
In any trellis view except for Wrap, you can remove the grid lines.



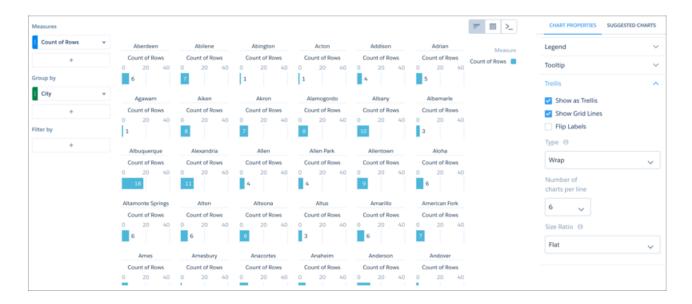
You can also move the labels to the other side of the chart.



Visualizing a large number of charts in a trellis can create a view that is difficult to read.



Adjust the matrix type and the size ratio to create a trellised chart that is easier to view and understand.



## Add Icons to Analytics Charts

Bar charts (but not stacked bars), dot-plot charts, and line charts can have icons along with dimension values as labels. Polar gauge charts can include icons in their centers.

To add icons to a chart, use a dataset with an ungrouped URL dimension whose values are URLs to the icon images. For example, each row in the following dataset has a URL that points to a flag image stored in your org:

```
Country, Country_code, Region, flag_img_url, Accounts, Value
Australia, aus, South
Pacific, https://myorg.content.force.com/file-asset/flagaustraliapng, 1898, 22930651
China, chn, East Asia, https://myorg.content.force.com/file-asset/flagchinapng, 2051, 29754009
```

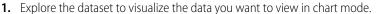
```
Europe,eur,Europe,https://myorg.content.force.com/file-asset/flageuropepng,4668,61238042
France,fra,Europe,https://myorg.content.force.com/file-asset/flagfrancepng,2303,28746829
India,ind,Asia,https://myorg.content.force.com/file-asset/flagindiapng,2721,32037499
Italy,ita,Europe,https://myorg.content.force.com/file-asset/flagitalypng,1722,26340986

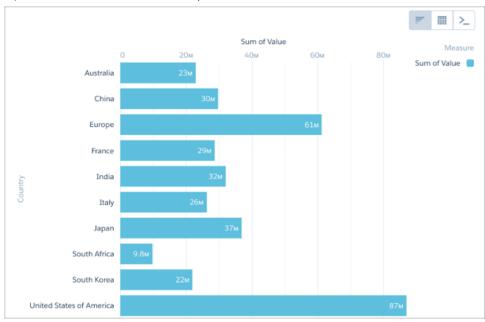
Japan,jpn,East Asia,https://myorg.content.force.com/file-asset/flagjapanpng,2872,36916012

Russian Federation,rus,East
Europe,https://myorg.content.force.com/file-asset/flagrussiapng,1847,27387456
South
Africa,zaf,Africa,https://myorg.content.force.com/file-asset/flagsouthafricapng,879,9794857

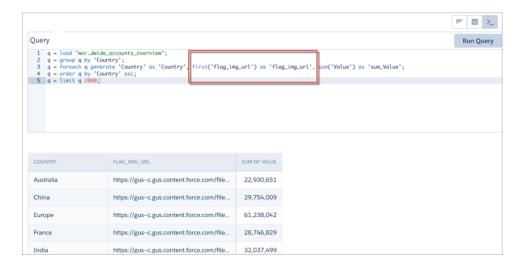
South Korea,kor,East
Asia,https://myorg.content.force.com/file-asset/flagsouthkoreapng,1643,21934785
United States of America,usa,North
America,https://myorg.content.force.com/file-asset/flagusapng,6527,87044191
```

After you upload the dataset to Analytics, explore the dataset using *only one* grouping. Then edit the SAQL query to add the image URLs to the result set.





2. Switch to SAQL mode and edit the guery using a non-grouping SAQL function such as first().



- **3.** Return to chart mode, then click the gear menu to open the chart properties.
- **4.** Click **Use Icons**, then select the name of the dimension containing the icon URLs from the **Icon Source** menu. Use the **Fit Mode** and **Shape** menus to adjust the icons' appearance.
  - Note: The **Use Icons** menu contains the name of every non-grouped dimension used in your query, even if these dimensions do not contain image URLs.



To use Chatter profile images, use your browser's development tools to find the image's underlying URL.

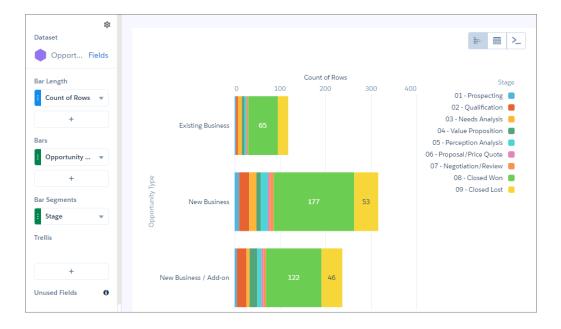


Once you've collected the URLs, add them to a column in your dataset before uploading the dataset to Analytics.

```
name,url_src,num_accts,value_accts,territory
astro,https://org62--c.na44.content.force.com/profilephoto/7290M000000WJzg/M/1,829,1309742,North
America
...
```

## **Bar Charts**

Use a bar chart to provide a quick visual comparison of related values. Use a stacked bar chart to show groups within each bar.



## Create a Horizontal Bar Chart

Use a horizontal bar chart to compare values across one or more categories. Using the auto-fit feature, you can fit a bar chart into a crowded dashboard without the necessity of long scroll bars or loss of information.

For example, create a bar chart that analyzes the average opportunity amount by opportunity owner.

- 1. In the explorer, click **u** and then select the **Bar** chart type.
- 2. In the Bar Length field, add one or more measures.
- **3.** In the Bars field, add one or more dimensions to analyze the measures by.
- **4.** To rank the records and see the highest or lowest values, click the down arrow next to the measure and sort the results.



**5.** To change the chart display, click **7** and set the chart properties in the Formatting panel. For example, to show all bars without scrolling, select **Fit** in the Auto Fit field.





Tip: If you resize the bar chart while arranging a dashboard and lose the labels, choose **Preserve labels** in the Auto Fit field to restore them.

# Calendar Heat Map Charts

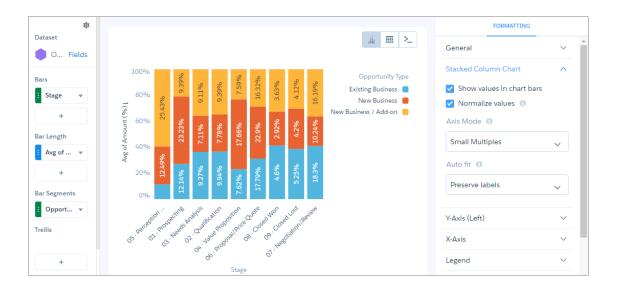
Calendar heat maps are useful for visualizing recurring discrete activities, such as closing accounts, over long periods of time. In this chart, you can easily change the granularity of the time-based grouping, such as from month to week or day.

To use a calendar heat map, set a measure in the Color field and a date dimension in the Time Periods field. The underlying query groups the measure by the specified time period. The chart shows a color for each time period based on the measure.



## Column Charts

Use a column chart (also called vertical bar chart) to show relative counts of things, such as leads or dollars. Use a stacked column chart to show groups within each bar.



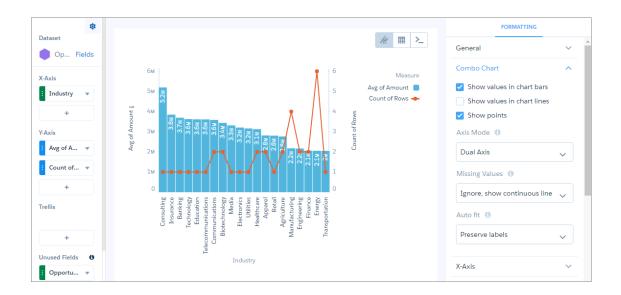
# Combo Charts

Use a combo chart to display two related series of data, such as discrete grouped values as vertical bars overlaid with a line chart representing an average value.

## Create a Combo Chart

Use a combo chart to compare two measures by the same dimension. For example, when comparing deal sizes across industries, use a combo chart to analyze the total amount and the number of deals for each industry.

- 1. In the explorer, click **u** and then select the **Combo** chart type.
- **2.** In the X-Axis field, add the dimension to analyze the measures by. For example, select **Industry**.
- 3. In the Y-Axis field, add at least two measures.
- **4.** To change the chart display, click **?** and set the chart properties in the Formatting panel. For example, set the axis mode to specify whether both measures appear on the same axis.



## **Donut Charts**

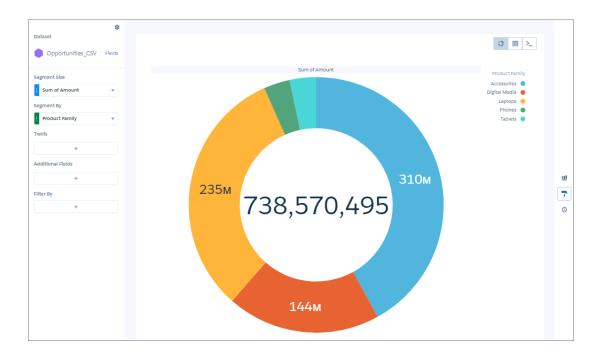
Use a donut chart when you have a grouping and want to show not only the proportion of a single value for each group member against the total, but also the total amount itself. If you remove the donut's center by selecting **0%** from the **Center Size** menu, this visualization is commonly referred to as a pie chart.

## Create a Donut Chart

Donut charts are useful visualizations when comparing a measure across a few categories, which makes the chart readable.

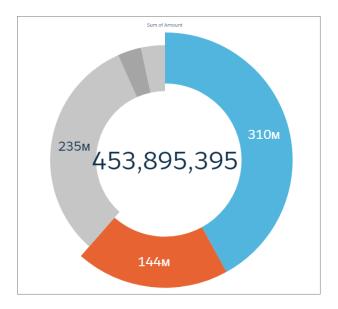
For example, showing opportunities that cover a limited number of product lines can be visualized effectively using a donut chart.

- 1. In the explorer, click **u** and then select the **Donut** chart type.
- 2. In the Segment Size field, add the measure that determines the size of each segment. For example, select the measure that shows the total opportunity amount.
- 3. In the Segment By field, add the dimension to group the data by. For example, select **Product Family**.

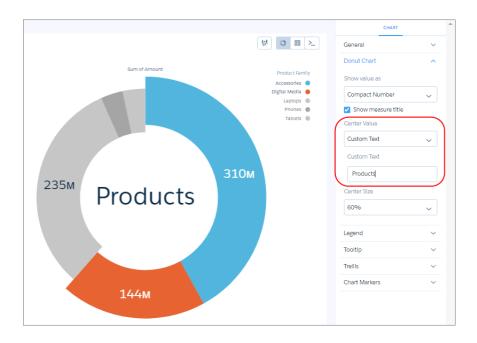


**4.** To highlight slices, click individual them.

The total in the center changes to reflect the total of the selected slices.



**5.** To change the chart display, click **?** and set the chart properties in the Formatting panel. For example, select **Custom Text** from the Center Value menu, then enter custom text in the Custom Text field.



## **Dot Plot Charts**

Horizontal and vertical dot plots use the size and coloring of bubbles to display multiple dimensions and measures. Use dot plots to visualize related data to compare performance or locate unusual values.

## Create a Horizontal Dot Plot

Create a horizontal dot plot chart to analyze one or two measures across one or more dimensions.

For example, you can create a horizontal dot plot that shows the number of opportunities for each account owner and record type.

- 1. In the explorer, click **u** and then select the **Horizontal Dot Plot** chart type.
- 2. In the X-Axis field, add the measure that you want to analyze. For example, select count of rows.
- 3. In the Y-Axis field, add at least one dimension that you want to analyze the measure by. For example, select **Account Owner**.
- **4.** In the Bubble Size field, add the measure that determines the bubble size, such as sum of amount.
- **5.** In the Bubbles field, add dimension that determines the different types of bubbles to show. For example, select **Account Type** to show bubbles for each record type.



**6.** To change the chart display, click ightharpoonup and set the chart properties in the Formatting panel.

# **Funnel Charts**

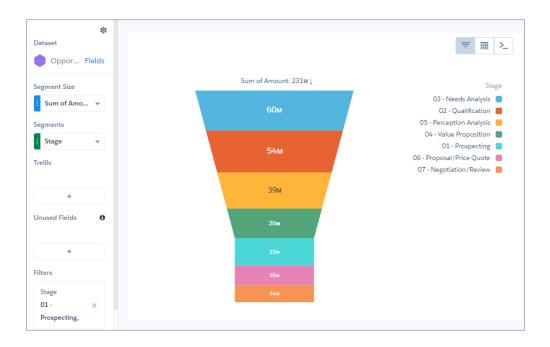
Use a funnel chart to visualize sequential data that can be broken up into stages, such as a sales cycle.

## Create a Funnel Chart

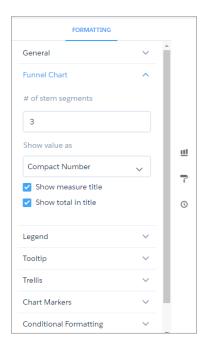
Use a funnel chart to compare a measure throughout a process.

For example, you can use this chart to compare the opportunity amounts through different pipeline stages.

- 1. In the explorer, click **1** and then select the **Funnel** chart type.
- 2. In the Segment Size field, add the measure that determines the size of each segment. For example, select the measure that shows the total opportunity amount.
- 3. In the Segments field, add the dimension to group the data by. For example, select **Stage**.



- Note: This funnel chart also has a filter that includes only open pipeline.
- **4.** To change the chart display, click and set the chart properties in the Formatting panel.



# **Gauge Charts**

Use gauge charts to track progress along a single measure, such as how much revenue has been realized versus the target.

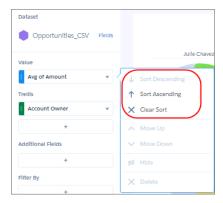
# Create a Gauge Chart

If you've set goals for, as an example, average value for each account manager, gauge charts are a good choice for showing how close you are to that goal.

You've got a dataset with account information. Now you want to present it in a chart that shows how close each account is in reaching the associated goal. Each gauge chart can display one value per account manager, and highlight value ranges.

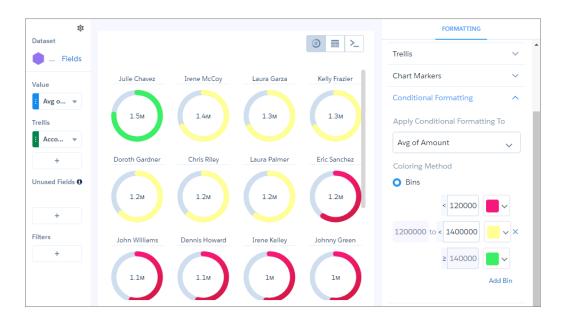
- 1. In the explorer, click 11 and then select the **Polar Gauge** (round) chart type.

  A gauge (angular) and flat gauge (linear) are also available.
- 2. In the Value field, add the measure that you want to analyze, like average opportunity amount.
- **3.** To compare the measure across every member of a category, like every account owner, add the dimension in the Trellis field. A separate gauge appears for each value of the selected dimension.
- **4.** To rank the performance based on the measure, sort the measure in ascending or descending order. Default sort order is alphabetical order.



5. To change the chart display, click and set the chart properties in the Formatting panel.

For example, set the Trellis Type field to **Wrap** so the chart can be viewed all at once, without having to scroll. Also, set the bins in Conditional Formatting to create band colors. The band makes it easy to see how close managers are to hitting their goal. The band color makes it easy to spot which managers are performing well and which can use some help.



The breakpoints set the range values where the color bands transition. In this example, the maximum (goal) specified in the Range Values section of the widget properties is \$2 million. If account managers hit at least \$1.4 million, they're in the green . If they hit between \$1.2 and \$1.4 million, they're in the yellow. Otherwise, they're in the red.

# **Heat Maps**

Use a heatmap to visually enhance high- and low-value data when there's a single measure and multiple dimensions.

#### Create a Heat Map Chart

Use a heat map chart to analyze the distribution of data to find if there are concentrations in particular segments.

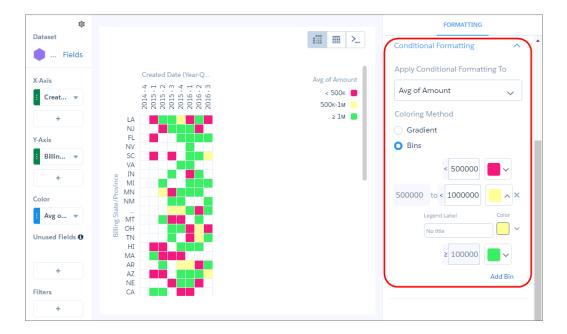
For example, use a heat map to determine which functional areas and quarters have the most support cases.

- 1. In the explorer, click **u** and then select the **Heat Map** chart type.
- 2. In the X-Axis field, add a dimension to analyze the measure by. For example, add the Created Date dimension and choose **Year-Quarter**.
- 3. In the Y-Axis field, add another dimension. For example, select **Billing State/Province**.
- **4.** In the Color field, add the measure that you want to analyze across both dimensions. For example, select **Avg** > **Amount** to look at the average opportunity amount.
  - By default, the heat map shows a color gradient based on two colors.



- ? Tip: When it's hard to tell the difference between gradients, use bins.
- 5. To change the chart display, click and set the chart properties in the Formatting panel.

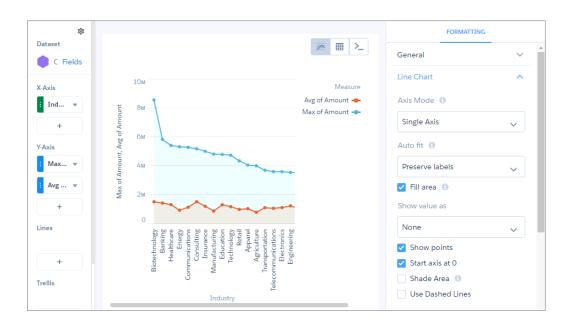
  For example, to categorize values in high, medium, and low bins, select **Bins** under the Conditional Formatting section, and set them up based on thresholds.



# **Line Charts**

Use a line chart when you have one important grouping representing an ordered set of data and one or more values to show.

Line charts are useful for comparing the value of measures, such as sales and profit totals, over a series of categories (grouped dimensions) such as industries and sales territories.



# **Map Charts**

Use a map if you have data with a geographical component that can shade areas in proportion to mapped values, allowing for visual pop-out of high-value areas. The map chart is found in the dashboard designer and classic designer.

Data for map charts must contain geographical names corresponding to the geographical entities represented on the map. Analytics map charts are not case-sensitive, but specific codes or names for geographical entities such as US states and world countries are expected.

For maps of the USA, each row of data must contain a single field identifying the state by its two-letter postal code (recommended) or its full common name. A row with data linked to the state of California, for example, must have an identifying field with "CA" or "California", but not "Calif".

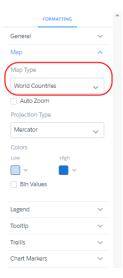
For global maps, the identifying country names must follow ISO 3166-1 (alpha 3) three-letter code (recommended) or be spelled out using the country names set by ISO 3166-1 (alpha 3). A row with data linked to the United Kingdom, for example, must have an identifying field with "GBR" or "United Kingdom", but not "Great Britain".

## Create a Map Chart

Use a map chart to analyze data across geographical regions.

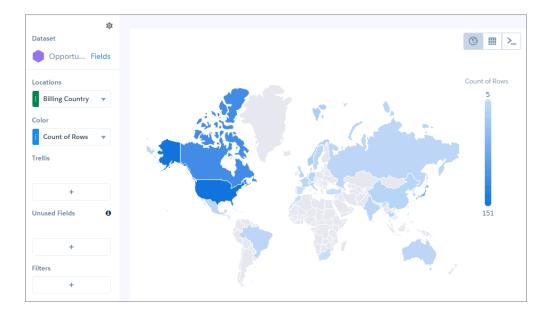
For example, you can use color saturation in a map chart to indicate the number of opportunities in the pipeline for each country in which you do business.

- 1. In the explorer, click <u>u</u> and then select the **Map** chart type.
- 2. Click  $\ref{thm:property}$  and choose the type of map in the Map Type field. For example, to analyze measures by countries, choose **World Countries**.

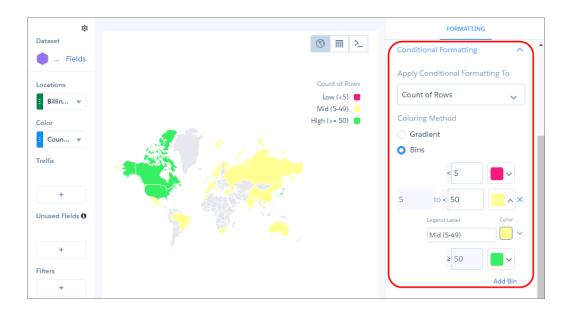


- **3.** In the Locations field, add the dataset field that contains the locations. For example, select **Billing Country**, which corresponds to the World Countries map type.
- **4.** In the Color field, add the measure that determines the color of each region. For example, select **Count of Rows** to show colors based on the number of opportunities for each country.

  By default, the map shows a color gradient based on two colors.



- Tip: When it's hard to tell the difference between gradients, use bins.
- **5.** To bin values in high, medium, and low categories, select **Bins** under Conditional Formatting, and choose the low and high value thresholds and the legend labels and colors.



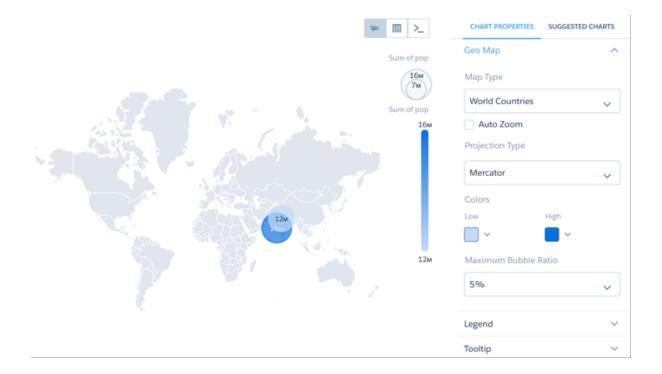
**6.** To make more changes to the chart display, set the chart properties in the Formatting panel.

# Properties of Maps

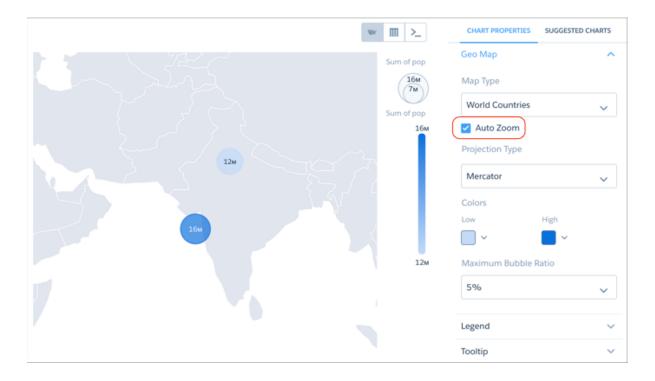
The map chart is configured with the properties in the dashboard designer. These properties have equivalent JSON properties.

Configure Maps to Auto-Zoom on Selected Areas

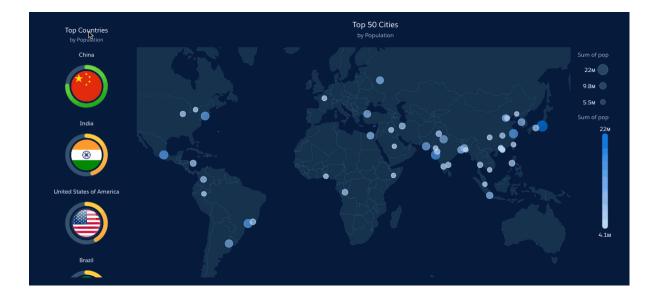
When you select datapoints in a particular geographical area of your map chart, the data in that area is highlighted.



With auto-zoom, the map chart both highlights the data and zooms in the geographical area.



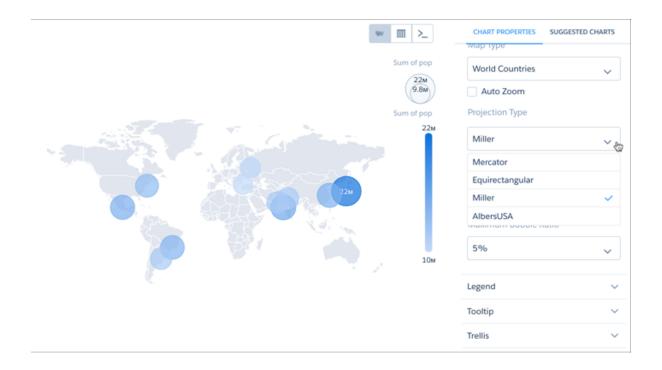
Any filtering that occurs on the visualized data can trigger auto-zoom, including faceting in dashboards, allowing you to create dynamic maps.



## Set the Map Projection Type for Map Charts

A map projection is a method for representing shapes from the curved surface of the Earth (or any other curved surface) using shapes on a flat surface. Some map projection types preserve the accuracy of shape outlines while sacrificing the correct representations of area

sizes, while others preserve relative size but distort the outlines. You can apply the projection of your choice using the Projection Type menu.



## JSON Represnentation Map Chart

This is an example map JSON with a United States map.

```
"visualizationType": "choropleth",
"step": "step_newmap",
"map": "US States",
"legend": {
  "show": false,
  "inside": false,
 "showHeader": true,
  "position": "right-top"
},
"title": {
  "label": "",
  "subtitleLabel": "",
  "align": "center"
},
"theme": "wave",
"lowColor": "#C5DBF7",
"highColor": "#1674D9",
"trellis": {
  "enable": false,
  "type": "x",
  "chartsPerLine": 4
```

```
}
```

Other available values for the map property are:

"World Countries", "Americas", "North America", "South America", "Central America", "Caribbean", "Europe", "Eastern Europe", "Northern Europe", "Southern Europe", "South Asia", "South Asia", "South East Asia", "East Asia", "Australasia", "Africa", "East Africa", "Middle Africa", "North Africa", "Southern Africa", "Western Africa", "EMEA", "APAC".

# **Bubble Map Charts**

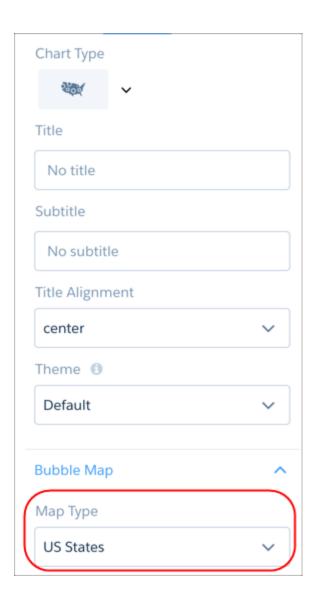
Use a bubble map chart to visually indicate measure values in specified geographical areas.

## Create a Bubble Map Chart

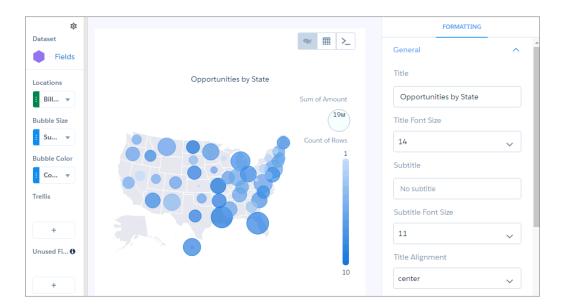
Analytics bubble-map charts use the same maps available to map charts, giving you another choice representing measure values on the map.

For example, you can use bubbles instead of color saturation alone to indicate the number of opportunities in the pipeline for each state in the United States.

- 1. In the explorer, click **u** and then select the **Bubble Map** chart type.
- 2. Click  $extbf{7}$  and choose the type of map in the Map Type field. For example, to analyze measures by state, choose **US States**.



- **3.** In the Locations field, add the dataset field that contains the locations. For example, select **Billing State/Province** if the map type is US States.
- **4.** In the Bubble Size field, add the measure that determines the bubble size.
- **5.** In the Bubble Color field, add the measure that determines the bubble color.
- **6.** Set the chart properties in the Formatting panel to make other adjustments, such as entering the chart title.



# Geo Map Charts

Geo maps allow you to visualize data that contains geographical coordinates (latitude and longitude). Using coordinates allows you to place visual data elements more precisely on map charts.

## Create a Geo Map Chart

A dataset with geographical location data, such as U.S. states, can be overlaid on a U.S. map. The bubbles representing a measure appear centered on the state areas. If the locations are tied to particular areas in those states, coordinates can be used to locate the bubbles more accurately.

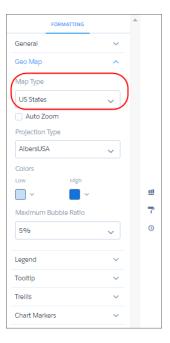
For example, with airline data tied to particular airports, use airport latitude and longitude coordinates to visualize the data at each airport's actual location. The dataset could look like the following:

```
Airport, Year, Quarter, lat, lng, flights, passengers
JFK, 2014, 1, 40.639751, -73.778925, 120000, 67276
SFO, 2014, 1, 37.618972, -122.374889, 30000, 7383
ORD, 2014, 1, 41.978603, -87.904842, 50000, 90908
HNL, 2014, 1, 21.318681, -157.922428, 10000, 5262
ATL, 2014, 1, 33.640411, -84.419853, 217089, 24044724
DFW, 2014, 1, 32.89748, -97.040443, 169955, 15888600
DEN, 2014, 1, 39.849312, -104.673828, 141381, 13368128
SEA, 2014, 1, 47.443546, -122.301659, 84283, 10585134
SLC, 2014, 1, 40.758701, -111.876183, 81238, 5285402
PHX, 2014, 1, 33.457439, -111.727386, 107615, 10533665
JFK, 2014, 2, 40.639751, -73.778925, 170000, 77276
SFO, 2014, 2, 37.618972, -122.374889, 40000, 8383
ORD, 2014, 2, 41.978603, -87.904842, 50000, 100908
HNL, 2014, 2, 21.318681, -157.922428, 11000, 6262
ATL, 2014, 2, 33.640411, -84.419853, 227089, 34044724
DFW, 2014, 2, 32.89748, -97.040443, 170955, 25888600
DEN, 2014, 2, 39.849312, -104.673828, 151381, 23368128
SEA, 2014, 2, 47.443546, -122.301659, 85283, 20585134
```

```
SLC, 2014, 2, 40.758701, -111.876183, 82238, 6285402
PHX, 2014, 2, 33.457439, -111.727386, 117615, 11533665
JFK, 2014, 3, 40.639751, -73.778925, 210000, 87276
SFO, 2014, 3, 37.618972, -122.374889, 50000, 9383
ORD, 2014, 3, 41.978603, -87.904842, 50000, 90908
HNL, 2014, 3, 21.318681, -157.922428, 12000, 7262
ATL, 2014, 3, 33.640411, -84.419853, 237089, 35044724
DFW, 2014, 3, 32.89748, -97.040443, 180955, 26888600
DEN, 2014, 3, 39.849312, -104.673828, 161381, 24368128
SEA, 2014, 3, 47.443546, -122.301659, 95283, 22585134
SLC, 2014, 3, 40.758701, -111.876183, 92238, 6585402
PHX, 2014, 3, 33.457439, -111.727386, 127615, 13533665
JFK, 2014, 4, 40.639751, -73.778925, 220000, 117276
SFO, 2014, 4, 37.618972, -122.374889, 60000, 7000
ORD, 2014, 4, 41.978603, -87.904842, 50000, 90908
HNL, 2014, 4, 21.318681, -157.922428, 13000, 8262
ATL, 2014, 4, 33.640411, -84.419853, 247089, 36044724
DFW, 2014, 4, 32.89748, -97.040443, 190955, 27888600
DEN, 2014, 4, 39.849312, -104.673828, 171381, 25368128
```

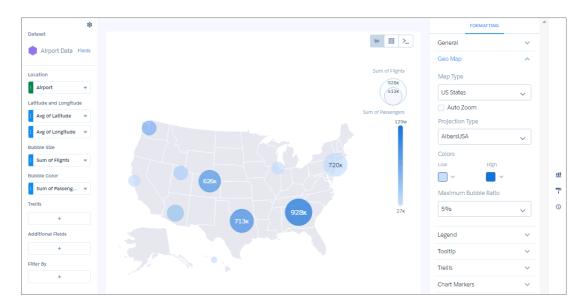
- 1. In the explorer, click **u** and then select the **Geo Map** chart type.
- 2. To select the map type in the chart properties, click 7.

  The map type depends on the region that you want to show in the map. For example, if your flights are only in the Unitied States, select **US States**.



- 3. In the Locations field, select the location field that determines where to add bubbles. For example, select the Airport field.
- **4.** In the Latitude and Longitude field, add two measures: the first contains average latitude coordinates and the second contains average longitude coordinates.

- 👔 Tip: If you're adding measures in a SAQL query, add the latitude and longitude measures first, and then any other measures.
- 5. In the Bubble Size field, add a measure that determines the bubble size, such as sum of flights.
- **6.** In the Bubble Color field, add a measure that determines the color, such as sum of passengers.



**7.** To make additional changes, such as setting the colors of the geo map chart bubbles, set the chart properties in the Formatting panel.

# **Custom Map Charts**

Using map charts that can shade areas in proportion to mapped values allows for visual pop-out of high-value areas. You can use custom maps with geographical units or to illustrate any type of area that can be represented by polygons.

Use a custom map if you have data with a geographical component that doesn't match any of the standard maps provided by Analytics charts, such as custom regions. Other areas that can be represented with GeoJSON, such as stadium seat sections, city blocks, or floor plans, can also be represented as a map in Analytics. Data is overlaid on a custom map using either an id or name property as a key.

Custom map charts in Analytics can be created from GeoJSON with a geometry type of Polygon or MultiPolygon. See the reference section for more information.

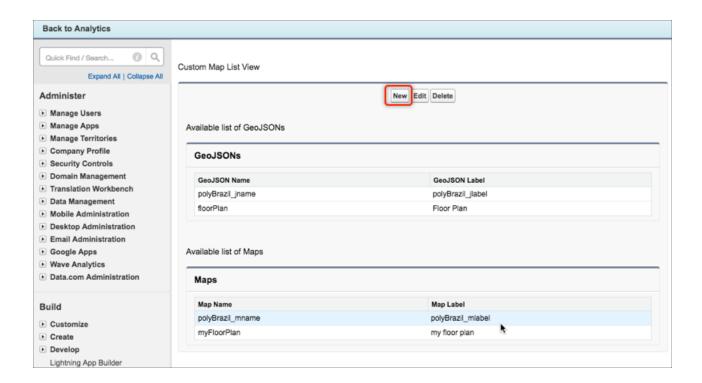


**Note:** Custom map charts can be used in the dashboard designer and classic designer. However, the method for creating them is different for each designer.

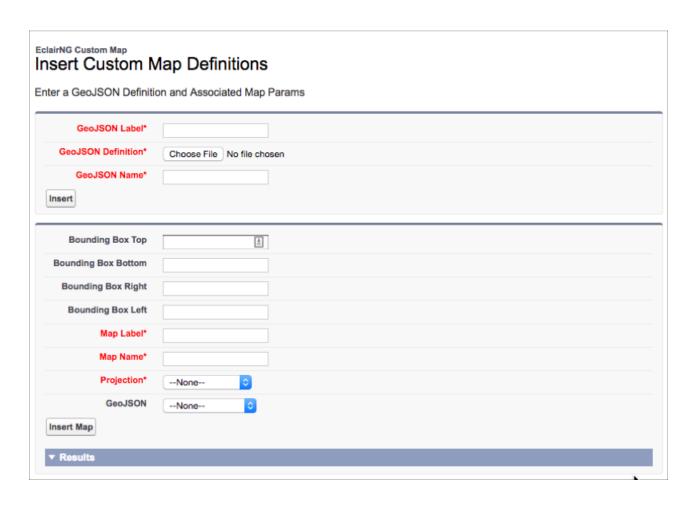
#### Create a Custom Map Chart

Create a custom map by uploading a GeoJSON file containing the data that defines the map. The maximum supported file size is 10 MB. You can create custom maps for dashboard designer or classic designer dashboards.

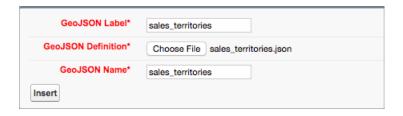
- 1. While logged in to your Salesforce org, navigate to the URL formed by appending /analytics/wave/web/custommap.apexp to your org's base URL.
  - For example, if your org's base URL is "https://na30.salesforce.com", go to https://na30.salesforce.com/analytics/wave/web/custommap.apexp.
- 2. Click New.



The insertion window for a new custom map appears. It has two panels, one for the GeoJSON and one for the map itself.

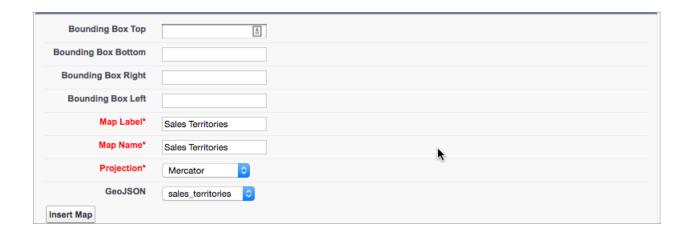


3. Fill in the required fields (shown in red) in the GeoJSON section and choose the GeoJSON file to load.



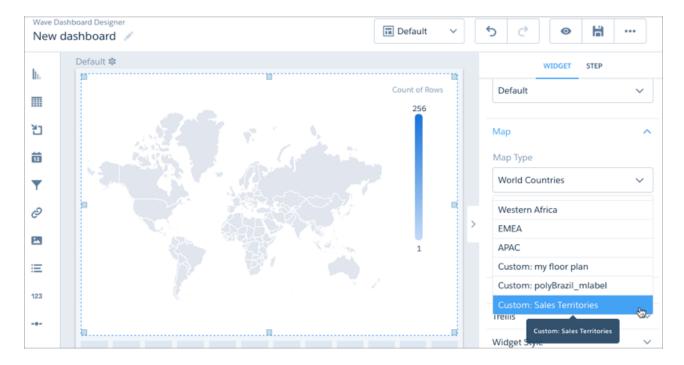
The GeoJSON name and label are used in the custom-map administration screens.

- **4.** Click **Insert** and look for a confirmation message in the Results section.
- **5.** Fill in the required fields (shown in red) in the map section. The map name and label are used in Analytics.
- **6.** Choose a projection based on the type of geo data you are uploading, and choose the GeoJSON definition you created.



Mercator is most suitable for traditional geographical maps. Use AlbersUSA for a map of the United States of America that includes Hawaii and Alaska near the rest of the United States. Use Equirectangular for simple geometric shapes such as floor plans, city blocks, or zip-code areas.

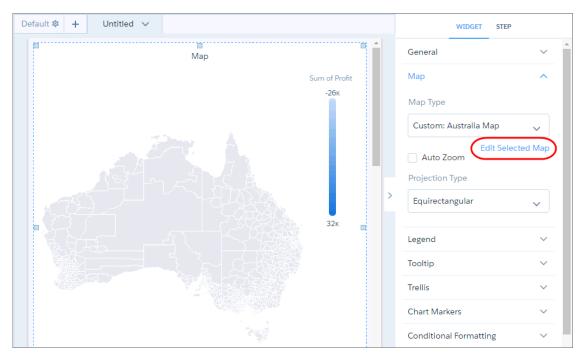
- 7. To zoom in on a particular region of the map, specify the coordinates to set the bounding box.
- **8.** Click **Insert Map** and look for a confirmation message in the Results section.
- **9.** To see the map, in the explorer, choose the map chart, and click **Map Type**.



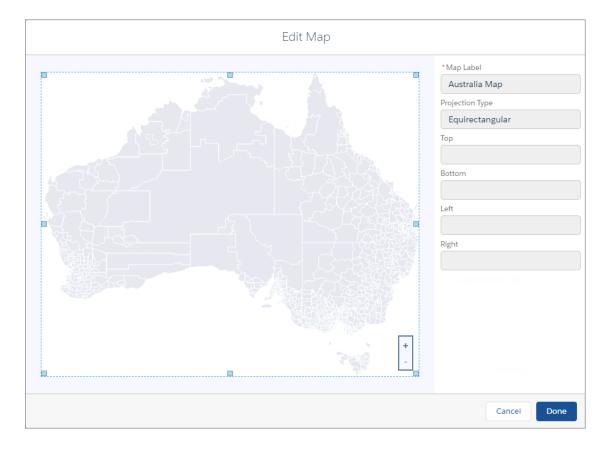
# Edit and Delete a Custom Map

Edit a map to change its boundaries.

1. In the Map Type property, select the map type and then click **Edit Selected Map**.



**2.** Drag the handles of the map to change the bound box. The new coordinates appear in the right pane.



#### 3. Click Done.

## **Properties of Custom Maps**

Proper formatting of the underlying GeoJSON is critical for successfully overlaying data onto a custom map. For improved presentation, it may be necessary to adjust the map's bounding-box coordinates to zoom in on the overlaid areas.

#### GeoJSON Structure

Standard GeoJSON typically has a structure that contains feature blocks similar to the following:

Each feature block defines a shape, or map area. To correctly overlay data onto the map, the data must have a column with values uniquely matching one of the properties in the GeoJSON. For example, if the data has values in a column called Country\_Code, then each feature block in the GeoJSON should have a property called "id" with values that exactly match values in Country\_Code. The feature block with "id": "SI" would match a row in the data that has "SI" in the Country\_Code column, and that data can then be overlaid on the area defined by that feature block. To overlay the data on the matching areas, you'll have to group on Country\_Code when exploring the dataset in Analytics.

The "id" property is required, and it has to be at the same level as "properties" in the GeoJSON. Often, however, it's a child of "properties":

Sometimes "id" doesn't exist at all, and must be created. In either case, the original GeoJSON must be edited to contain the "id" property at the level of the "properties" property. In a single feature block, doing that is trivial, but a large GeoJSON file could contain hundreds of GeoJSON feature blocks. Using a script is recommended.



**Note:** For GeoJSON that lacks an "id" property, Analytics falls back to using the values in properties.name. If your GeoJSON has a property called "name" under "properties", and "name" has values that match a column in your data, it can be used instead of "id". Do not change the position of name. It must remain a child of "properties".

#### **Bounding Boxes**

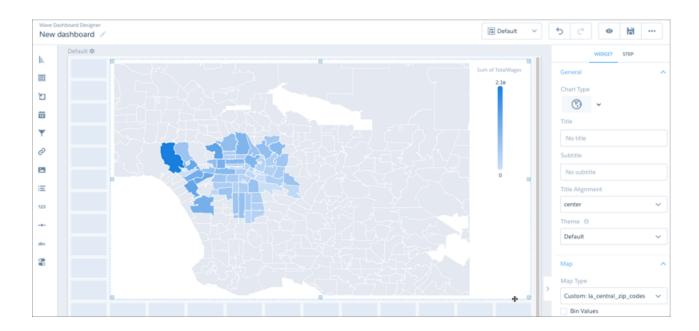
You can "zoom" into a map area by redefining the area of the map to display. This is done by giving the boundaries of the new area in terms of coordinates. These coordinates are called a bounding box. A bounding box limits the map to the shapes within the coordinates, or borders, of the bounding box.

When you create a map from a GeoJSON without a bounding box, every defined shape is displayed as an area on the map. For example, the following map of zip codes in the Los Angeles area does not use a bounding box:



The areas of interest, where data has been overlaid on the map, are indicated by the red rectangle. To make the map more readable, the view should zoom in on the zip-code areas that have data. The coordinates (in this case, latitude and longitude) bordering the area of interest can be found using a GeoJSON tool that gives the coordinates of the areas in the map. A second map is then created from the original GeoJSON, this time with bounding-box coordinates.

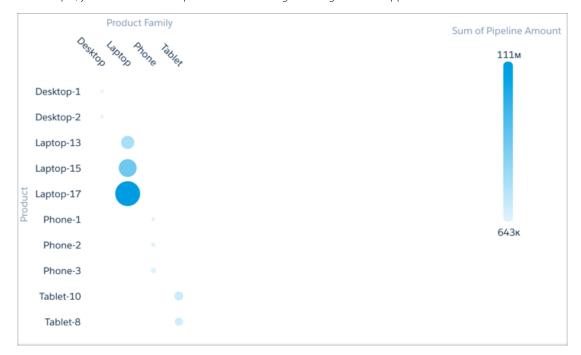
When viewed in Analytics, this new map is zoomed in on the area of interest.



You can set the bounding box while creating or editing a map.

# **Matrix Charts**

Use matrix charts to create a table that represents measures visually, allowing you to quickly spot extreme values. For example, you can show which product families are generating the most opportunities.



## Create a Matrix Chart

Use a matrix chart to compare one or two measures across two dimensions.

For example, use a matrix chart to compare the number of opportunities by sales rep and pipeline stage.

- 1. In the explorer, click **u** and then select the **Matrix** chart type.
- 2. In the X-Axis field, add a dimension to analyze the measure by. For example, select **Stage**.
- 3. In the Y-Axis field, add another dimension. For example, select Opportunity Owner.
- **4.** In the Bubble Size field, add the measure that you want to analyze across both dimensions. For example, select average opportunity amount.
- 5. In the Bubble Color field, add another measure that you want to analyze across both dimensions. For example, select **Count of Rows** to look at the number of opportunities.

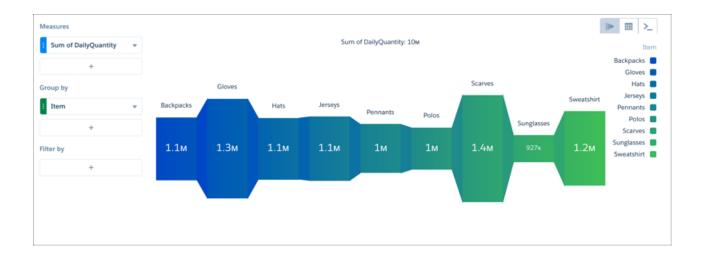
  By default, the matrix shows a color gradient based on two colors.



**6.** To change the chart display, click and set the chart properties in the Formatting panel. For example, change the two colors under the Conditional Formatting section.

# Origami Charts

Use an origami chart to create a striking horizontal visualization for easily identifying high- and low-value data when there's a single measure and a single grouping.



## **Parallel Coordinates Charts**

Use a parallel coordinates chart when you have multiple measures and a single grouping. Parallel coordinate charts are useful for displaying how data elements in a grouping stack up against each other.

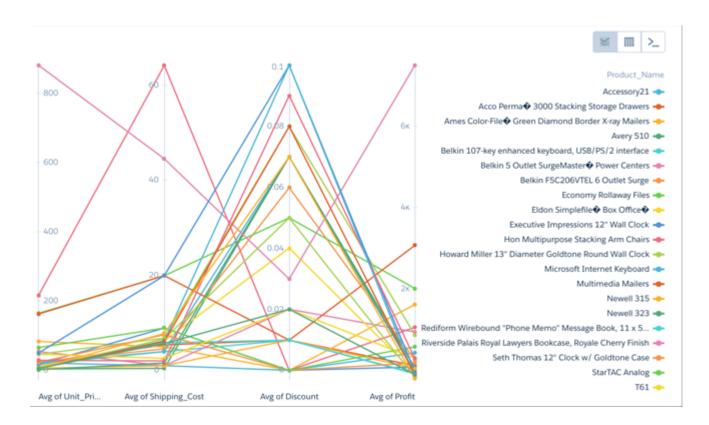
## Create a Parallel Coordinates Chart

If you're trying to spot outliers or patterns based on related metric factors, parallel coordinates charts can help tease them out. For example, you have product pricing data but you aren't sure why some higher-volume products are more profitable than others.

- 1. In the explorer, click **u** and then select the **Parallel Coordinates** chart type.
- 2. In the Node Measures field, add the measures you're interested in.

  To compare product pricing, add average unit cost, discount, shipping cost, and profit.
- 3. In the Lines field, add the dimension that you'd like to group the data by. Each group gets its own line. For example, select **Product Name**.

The parallel coordinates chart shows that higher discounts aren't adding up to higher profits.



**4.** To change the chart display, click **7** and set the chart properties in the Formatting panel. For example, indicate whether to show every measure title in the chart.

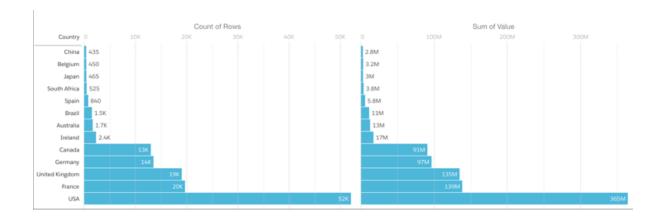
# **Pyramid Charts**

Use a pyramid chart to visually highlight relative sizes of stacked dimension values.

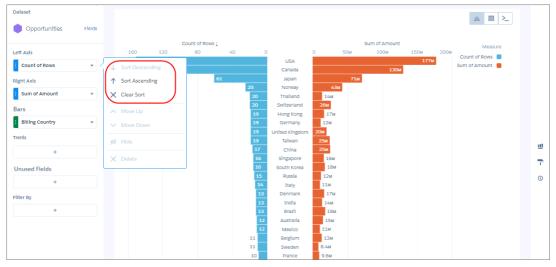
## Create a Pyramid Chart

A pyramid chart is a good choice for presenting related measures for one particular dimension, such as number of accounts and account values in a particular category.

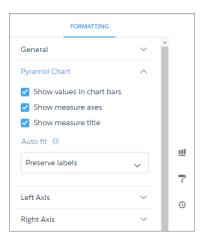
For example, you're interested in looking at the overall value and number of accounts in countries where your company does business. A bar chart can show that data in order, but it's not necessarily a compelling or easy-to-read visualization. Changing it to a pyramid chart improves both overall appearance and readability.



- 1. In the explorer, click **u** and then select the **Pyramid** chart type.
- 2. In the Left Axis field, add the measure to include on the left side of the pyramid. For example, select **Count of Rows**.
- 3. In the Right Axis field, add the second measure. For example, select **Sum of Amount**.
- **4.** In the Bars field, add a dimension to analyze the measures by, like Billing Country.
- **5.** To sort the results by a measure, select the down arrow next to the measure and select the sort order.



**6.** To change the chart display, click **7** and set the chart properties in the Formatting panel. For example, specify whether to show measure axes and titles.



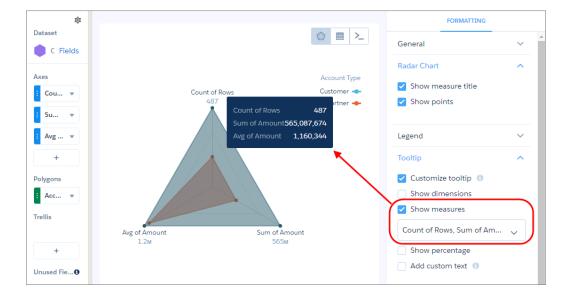
## **Radar Charts**

Use radar charts to display a small dataset with one dimension and at least three measure columns.

#### Create a Radar Chart

A radar chart is useful when you're trying to visually represent a dimension along three or more measure axes that have different scales. For example, you want to visualize the key metrics for all sales reps (opportunity owners) to determine who has superior performance.

- 1. In the explorer, click **u** and then select the **Metrics Radar** chart type.
- 2. In the Axes field, add at least three measures. For example, add average opportunity amount, total opportunity amount, and count of rows.
- 3. In the Polygons field, add the dimension to analyze the measures by. For example, select **Account Type**.
- 4. To change the chart display, click and set the chart properties in the Formatting panel. For example, show all measures in the tooltip when you hover over a data point.



5. To view a specific grouping, click it in the legend.



? Tip: Use a metrics radar chart instead of a stacked bar chart when the measures are similar across groupings. Although stacked bar charts can analyze multiple measures, they don't provide enough contrast when comparing values with subtle differences. For example, it's difficult to determine which customer segment has the highest average discount in this stacked bar chart.



# **Rating Charts**

Use a rating chart to get a sense of how well a measured quality, such as customer satisfaction, is meeting expectations.

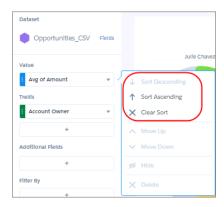
## Create a Rating Chart

If you've set a goal for, as an example, customer satisfaction in each of the countries where your company operates, rating charts are a good choice for showing how close you are to that goal.

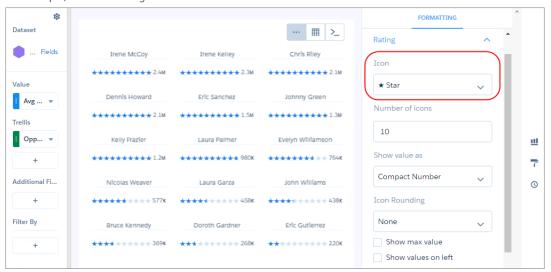
You've collected, averaged, and loaded the data from the surveys. Now you want to present it in a way that makes sense for customer satisfaction scores. Each rating chart can display 1 value per country, and highlight value ranges.

- 1. In the explorer, click **1** and then select the **Rating** chart type.
- 2. In the Value field, add the measure that you want to analyze, like average opportunity value.
- **3.** To compare the measure across each member of a category, like opportunity owner, add the dimension in the Trellis field. A separate rating chart appears for each value of the selected dimension.

**4.** To change the order of multiple rating charts, sort the measure in ascending or descending order. Default sort order is alphabetical order.

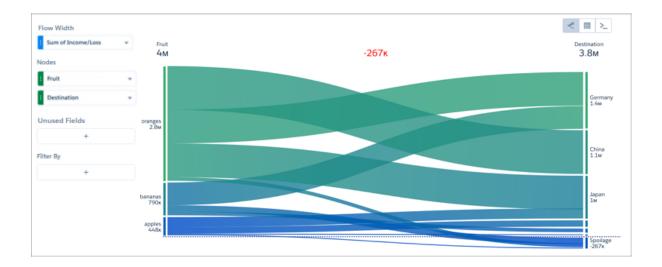


**5.** To change the chart display, click **?** and set the chart properties in the Formatting panel. For example, show the rating as a series of stars.



# Sankey Charts

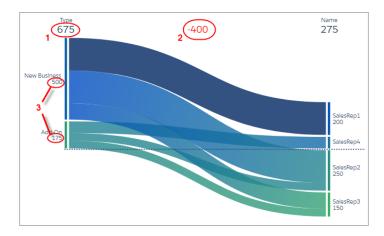
Use a sankey chart to visualize the distribution of a measure from one grouping to another grouping.



Note: The sankey chart performs calculations based on the absolute value of each measure. For example, you have the following data:

| # | Туре         | Name      | Amount |
|---|--------------|-----------|--------|
| 1 | New Business | SalesRep1 | 200    |
| 2 | New Business | SalesRep2 | 200    |
| 3 | New Business | SalesRep3 | -100   |
| 4 | Add-On       | SalesRep2 | -50    |
| 5 | Add-On       | SalesRep3 | 50     |
| 6 | Add-On       | SalesRep4 | 75     |

Based on the data in the table, total new business is 300 (200 + 200 + -100) and total add-on business is 75 (-50 + 50 + 75). When you visualize this data in a sankey chart, notice the different results: new business is 500 and add-on business is 175. These values (3) also impact the total (1) and difference between the two groupings (2).



## **Scatter Charts**

Use a scatter chart to visualize correlation between two groups of data.

#### Create a Scatter Plot Chart

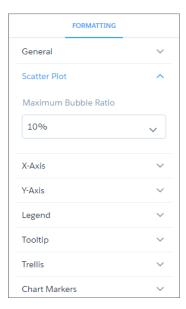
Use a scatter chart to see the correlation between two measures across a single dimension.

For example, use this chart to analyze the correlation between total opportunity amount and number of opportunities for product families.

- 1. In the explorer, click **u** and then select the **Scatter Plot** chart type.
- 2. In the X-Axis field, add the first measure. For example, select the count of rows.
- 3. In the Y-Axis field, add the second measure, such as sum of amount.
- **4.** In the Bubble Size field, add a third measure that determines the bubble size. For instance, add average amount.
- **5.** In the Bubble field, add the dimension that determines the bubbles that appear in the chart. For example, select **Product Family** to create a bubble for each family.



**6.** To change the chart display, click **?** and set the chart properties in the Formatting panel.



#### **Timeline Charts**

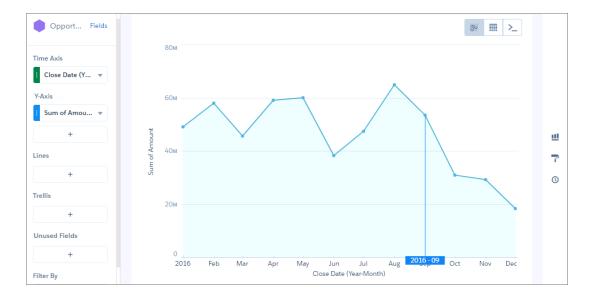
A timeline chart is a line chart with one axis dedicated to a time dimension. Use a timeline chart to show how a value changes over time.

#### Create a Timeline Chart

Use a timeline chart to analyze changes to a measure over time using a line.

For example, a timeline chart can show how profit changes over a year. Exploring a year's worth of data, you want to visualize not just the total profit, but how profits changes from month to month.

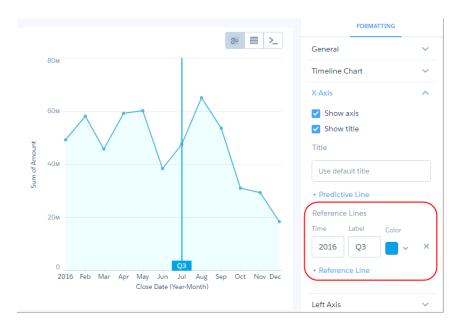
- 1. In the explorer, click **u** and then select the **Timeline** chart type.
- 2. In Time Axis, select the date field and the granularity that you want to analyze the results by. For example, select **Closed Date** > **Year-Quarter**.
- **3.** In Y-Axis, add at least one measure to analyze over time, such as the total opportunity amount.
- **4.** If needed, add a filter to restrict the results to a particular time period, like a single year. The timeline chart analyzes the measures with the time dimension shown along the x-axis.



- 5. To change the chart display, click and set the chart properties in the Formatting panel.

  For example, if some of the dataset includes predictions of future amounts, click **Predictive Line** under the X-Axis section in the charts properties panel. Or add a reference line to provide a visual cue about a particular point in time.
- **6.** To add a reference line, set the position of the reference line by specifying the date in **Time**.

  The numerical date you specify should match the granularity selected in the Time Axis field. For example, if you selected Year-Month and want the reference line to start just after August 2016, enter 2016/8. You can also specify a label in **Label** for the line, and a color.



#### Time Bar Charts

A time bar chart is a column chart with the horizontal axis showing a time dimension. Use a time bar chart to visualize changes over time with vertical bars, which is a great way to illustrate relative changes over time and highlight missing data.

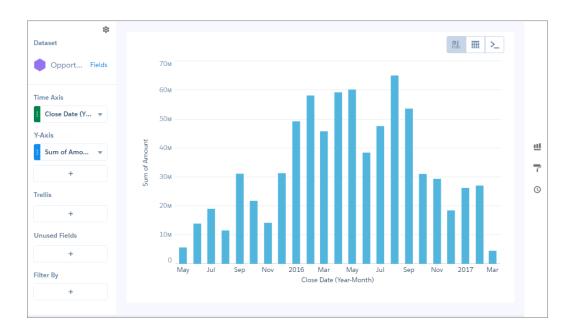


#### Create a Time Bar Chart

Use a time bar to analyze a measure over time using vertical bars.

For example, a time bar chart can show how total opportunity closes over time, where the lack of bars highlights no sales.

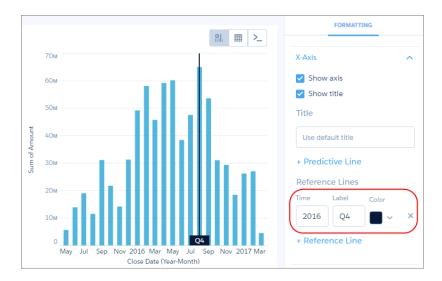
- 1. In the explorer, click **u** and then select the **Time Bar** chart type.
- 2. In Time Axis, select the date field and the granularity that you want to analyze the results by.
- **3.** In Y-Axis, choose the measure to analyze over time, such as the total opportunity amount. The time bar chart appears as a column chart, with the time dimension shown along the X-axis.



- **4.** To change the chart display, click and set the chart properties in the Formatting panel.

  For example, if some of the dataset includes predictions of future amounts, click **Predictive Line** under the X-Axis section in the charts properties panel. Or add a reference line to provide a visual cue about a particular point in time.
- 5. To add a reference line, set the position of the reference line by specifying the date in **Time**.

  The numerical date you specify should match the granularity selected in the Time Axis field. For example, if you selected Year-Month and want the reference line to start just after August 2016, enter 2016/8. You can also specify a label in **Label** for the line, and a color.



#### Time Combo Charts

A time combo chart shows two measures over time—one on a timeline and the other on a time bar. You can display both charts on the same or separate axes.

#### Create a Time Combo Chart

Use a time combo chart analyze two or more measures over time.

For example, this chart can show how the total opportunity amount and the number of opportunities change over time.

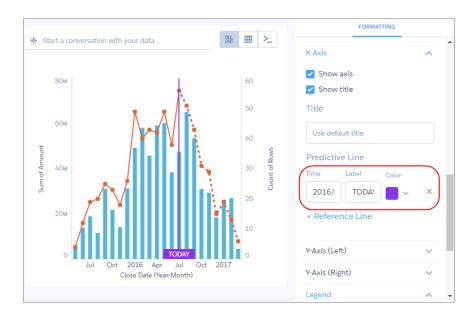
- 1. In the explorer, click **u** and then select the **Time Combo** chart type.
- **2.** In Time Axis, select the date field and the granularity that you want to analyze the results by.
- **3.** In Y-Axis, choose at least two measures to show, such as the total opportunity amount and count of rows. The first measure displays on the time bar graph and each subsequent measure displays on a timeline graph.



- 4. To change the chart display, click and set the chart properties in the Formatting panel.

  For example, if some of the dataset includes predictions of future amounts, click **Predictive Line** under the X-Axis section in the charts properties panel. Or add a reference line to provide a visual cue about a particular point in time.
- 5. To add a reference line, set the position of the reference line by specifying the date in **Time**.

  The numerical date you specify should match the granularity selected in the Time Axis field. For example, if you selected Year-Month and want the reference line to start just after August 2016, enter 2016/8. You can also specify a label in **Label** for the line, and a color.



# **Treemap Charts**

Use treemaps to visualize hierarchical quantitative data, where containing rectangles designate relationship using color, and "leaf" rectangles represent quantity using area.

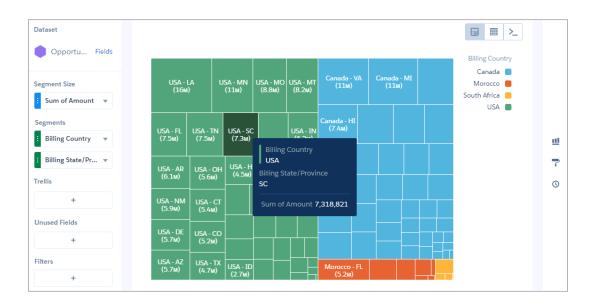
## Create a Treemap Chart

Treemap charts are especially useful for visualizing groupings that are difficult to organize well using other types of charts.

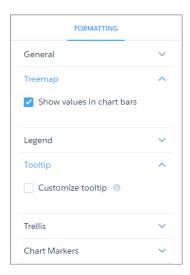
For example, you can show the number of opportunities by state or province in each country in a way that reveals top markets.

- 1. In the explorer, click <u>u</u> and then select the **Treemap** chart type.
- 2. In the Segment Size field, add a measure, such as total opportunity amount.
- 3. In the Segments field, add one or more dimensions to analyze the measure by. For example, select **Billing Country** and **Billing State/Province**.

In the treemap chart, each color represents a country, as indicated in the legend. Each rectangle represents a state or province in a country. The high-value states and provinces are easy to spot. Using tooltips, you can view details for any rectangle representing a state.



**4.** To change the chart display, click ightharpoonup and set the chart properties in the Formatting panel.



## **Waterfall Charts**

Use a waterfall chart to show the cumulative effect of sequentially introduced positive or negative values with breakdowns of value totals. Also known as "flying bricks" or "Mario" charts. To include breakdowns of value totals, use a stacked waterfall chart.

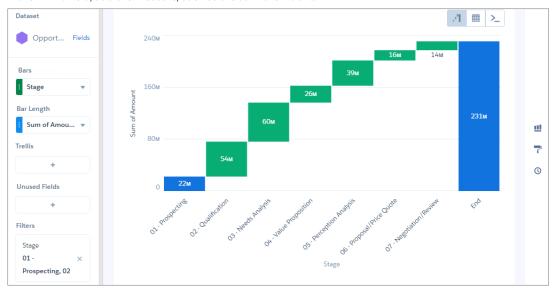
## Create a Waterfall Chart

Use a waterfall chart to analyze the smaller segments that comprise a total value.

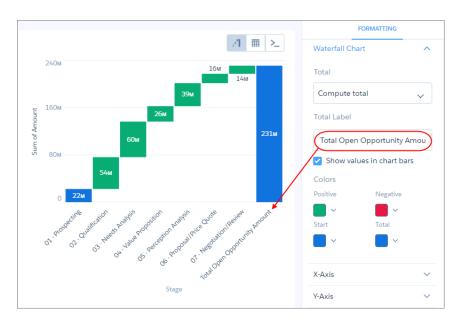
For example, use this chart to determine the relative contribution each stage adds to the total open opportunity amount,

- 1. In the explorer, click **u** and then select the **Waterfall** chart type.
- 2. In the X-Axis field, add the dimension to analyze the measures by. For example, select **Stage**.

**3.** In the Y-Axis field, add the measure, such as the sum of amount.



**4.** To change the chart display, click **?** and set the chart properties in the Formatting panel. For example, set the label for the total column.



# Clone a Lens

Build upon a visualization by cloning its containing lens to a new tab where you can continue exploring. You can save the original in its own tab.

- Click an existing Analytics lens to open it.
   If you're using a new, unsaved lens, you must save it before it can be cloned.
- 2. Select Clone in a New Tab from the More menu.

# **EDITIONS**

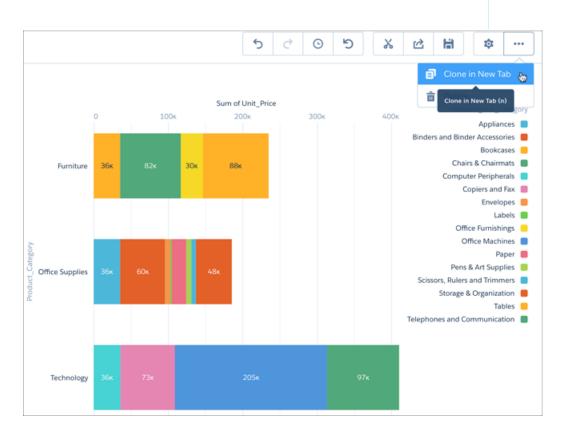
Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To view visualizations:

Use Analytics



A new, unsaved copy of the cloned lens opens in a new tab.

# Save a Visualization

Save your visualization as a lens.

1. Click the Save icon.



- **2.** Enter a title and a description for your lens, and select the app to save it in.
- 3. Click Save.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, Performance, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To view visualizations:

Use Analytics

# Share a Visualization

Share a visualization with your colleagues by posting to Chatter, getting its unique URL, downloading a screenshot of it, or downloading its filtered data. A Chatter post provides an image and a link to the asset—lens, dashboard, or app—in Analytics. Colleagues with the link and access to the asset can drill down and explore the information that's presented. To share without giving access to the asset, use the download options.

1. Click Share.



- **2.** Click the tab for the sharing method that you want:
  - a. Post to Feed posts to Chatter an image and the link to the lens, dashboard, or app. Select **User** or **Group** feed, enter the name, and then type your comment. You can also remove the image from your post by hovering over it and clicking the x. Note that posted images
  - b. Get URL provides a unique URL to the asset. Copy the link and then paste it wherever you want to share it.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, Performance, and **Unlimited** Editions. Also available in **Developer** Edition.

# USER PERMISSIONS

To view visualizations:

Use Analytics

- c. Download gives you options to share a visualization without giving access to it. You can download it as an image (.png) or as filtered data in Microsoft® Excel® (.xls) or comma-separated values (.csv) format.
- **3.** If applicable, click **Give Access** to set the level of sharing access.
- 4. Click Done.



Note: To share a visualization, you must give access to the app that contains it. Lenses, datasets, and dashboards within the default Shared App are accessible to all Analytics users, unless administrators have restricted access. All other apps are private unless someone with Manager access to the app has shared it with a specific user, group, or role.

# **Build Analytics Dashboards**

Build an Analytics dashboard to continuously monitor key metrics of your business, analyzing the results by key dimensions, like region, products, and time period. Add interactive charts that synthesize information into an easy-to-read format. To complement the charts, add tables that show record-level details. Add filters to allow dashboard viewers to change the focus of the results. Create customized layouts to optimize the display of a dashboard on different types of devices, like mobile phones, tablets, and desktops.

Watch a Demo: Build Interactive Analytics Dashboards (English Only)

Get Hands-On Training with Trailhead: Analytics Dashboard Building Basics



**Note**: For you to create and edit dashboards with the dashboard designer, the admin must enable it in Analytics setup—it's enabled by default—and must grant you the Create and Edit Analytics Dashboards user permission.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

This section discusses how to build dashboards with the dashboard designer. The dashboard designer is the newer designer that offers additional features to help you build dashboards more quickly and easily. Use a template to create a dashboard with a predefined design. Use the wizards to quickly build widgets. Use drag-and-drop, snap-to-grid, and browser reflow to effortlessly add, position, and align widgets in a dashboard. (For information about building dashboards with classic designer, see Build a Dashboard with the Classic Designer.)

#### IN THIS SECTION:

#### 1. Create an Analytics Dashboard with a Template

Each template has a unique layout with empty widgets (widgets without steps), sections, and a color scheme. To populate the widgets with your data, use the widget wizards. To create your own layout, choose the blank template.

# 2. Create Dashboard Pages

Make the information on a dashboard easier to digest by chunking the content into multiple pages. With pages, you can tell a story by creating a dynamic pathway through your dashboard. Depending on how you lay out your pages, you can create some cool effects as you transition from one page to the next. And because a page has fewer queries, dashboard performance increases.

#### 3. Add Widgets to the Dashboard

Widgets are the basic building blocks of a dashboard. In the dashboard designer, you can add different widgets to perform functions. For example, widgets can calculate key performance indicators, filter dashboard results, visualize your data using interactive charts, and show record-level details in tables.

#### 4. Manage Steps for Widgets

Steps return results that are displayed in widgets. For example, a number widget displays the result of a calculation—that calculation is defined in a step. Steps can query a data source, like a dataset or a Salesforce object. They can also be a static list of user-defined values—a static step. In addition to clipping a lens from an exploration, you can use the following ways to create steps in the dashboard designer: use the widget wizard or create it manually.

#### 5. Make the Dashboard Widgets Interactive

Analytics dashboards have unique features that allow you to make the widgets interactive. For example, widgets in the dashboard can be filtered to show only results for the region that's selected in a list widget. Or, when the value of a number widget can change to red when it falls below a threshold.

#### 6. Set Initial Selections and Global Filters in the Dashboard

Set the initial selections and global filters that appear when the dashboard first opens. To analyze the results from a different angle, the dashboard viewer can change the initial selections and, if configured, global filters while viewing the dashboard.

### 7. Generate Unique Analytics Dashboard Layouts for Different Devices

After you add widgets to the dashboard, optimize the layout for each device on which the dashboards can be viewed. For example, you can remove widgets from a mobile phone layout to reduce the dashboard size for the smaller screen. You can also move widgets around in one layout and it doesn't affect the other layouts.

#### 8. Optimize Dashboard Performance

Before you finalize the dashboard, run a performance check on the dashboard and its steps to ensure that everything is running optimally. The dashboard inspector identifies different types of bottlenecks, like query issues and redundant queries, and provides recommendations to improve performance. Because dashboard layouts can contain different widgets (and steps), run the inspector on each layout. If a dashboard contains multiple pages, run the inspector on each page. The inspector provides results only for the current page.

## 9. Keyboard Shortcuts for Analytics Dashboards and Lenses

You can do some basic actions from your keyboard. The dashboard designer shortcuts vary based on whether you are using the classic designer or dashboard designer.

#### SEE ALSO:

What Is a Dashboard?

Best Practices for Building Your Own Analytics Dashboard

Convert Your Classic Designer Dashboard to Dashboard Designer

Key Differences Between the Classic Designer and Dashboard Designer

Grant Users Access to the Dashboard Designer and Classic Designer

# Create an Analytics Dashboard with a Template

Each template has a unique layout with empty widgets (widgets without steps), sections, and a color scheme. To populate the widgets with your data, use the widget wizards. To create your own layout, choose the blank template.

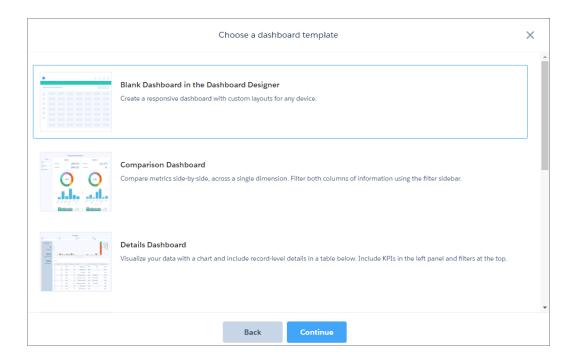
Watch a Demo: Quickly Create Wave Dashboards with Templates (English Only)

1. From the home page, select **Create** > **Dashboard**.

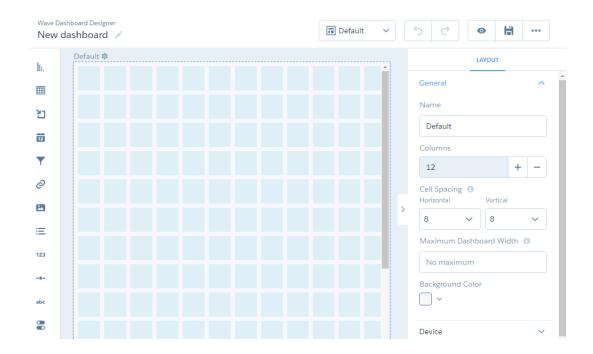
# **USER PERMISSIONS**

To create a dashboard:

 Create and Edit Analytics Dashboards



**2.** Select a template, and then click **Continue**. For example, select **Blank Dashboard in the Dashboard Designer**.



In addition to the blank template, you can choose a template with a prebuilt dashboard design. These templates are built for dashboard designer only.

**3.** To edit the dashboard, click ...

**4.** If you selected a prebuilt template, you can add a step to each widget by clicking the icon inside an empty widget. A wizard guides you through adding the step.

When you complete the wizard, Analytics populates the widget based on the results of the step. Analytics also adds the step to the step panel.

- **5.** To save the dashboard to an app, click 🛗 .
- **6.** Enter a title and description, and then select the app in which you want to save the dashboard.

The permissions on the app determine each user's access to the dashboard. To ensure that the right users have the right access to the dashboard, review the app permissions.

#### 7. Click Save.

**8.** Click \_\_\_ and then click **Dashboard Properties** to set the default widget properties.

When you create a widget, you can specify whether the widget uses the default properties. Use defaults to ensure that the background and borders of all widgets are consistent.

#### IN THIS SECTION:

#### **Dashboard Properties**

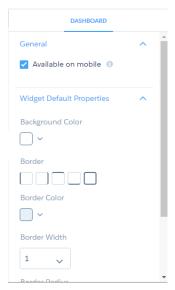
These properties apply to a dashboard designer dashboard. Some of them are the default widget properties that you can apply to each widget to ensure a consistent appearance.

#### Best Practices for Building Your Own Analytics Dashboard

Follow best practices to design and build useful, effective Analytics dashboards, while minimizing rework and addressing potential gaps.

# **Dashboard Properties**

These properties apply to a dashboard designer dashboard. Some of them are the default widget properties that you can apply to each widget to ensure a consistent appearance.



### General

Select **Available on mobile** to show this dashboard in the Einstein Analytics mobile app. When not selected, mobile users can't access this dashboard. Use this option to hide dashboards that don't perform well on the mobile app.

# Widget Default Properties

| Property         | Description  |
|------------------|--|
| Background Color | Default background color for widgets               |
| Border           | Default border around widgets                      |
| Border Color     | Default color for widget borders                   |
| Border Width     | Default width of widget borders (in pixels)        |
| Border Radius    | Default roundness of the corners of widget borders |

# Best Practices for Building Your Own Analytics Dashboard

Follow best practices to design and build useful, effective Analytics dashboards, while minimizing rework and addressing potential gaps.

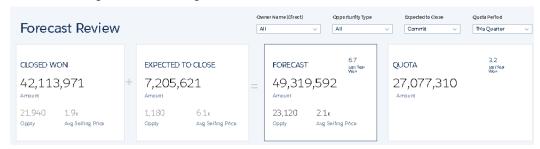
- Before you build the dashboard, take into account the following design best practices:
  - Sketch your dashboard on paper or a whiteboard before you start building.
  - Prioritize elements, top left to bottom right. With languages that are read left to right, people start by looking at the top left
    corner and working their way down. Consider the audience's language and design for it. If your audience has limited time or
    attention, place important elements where they will be noticed.
  - Place high-level, easy-to-read, actionable widgets near the top left, and place widgets with supporting information lower. For
    example, place numbers that display a single measure, such as revenue for the current quarter, high and to the left.

#### Highlight facts that the audience wants to know at a glance.

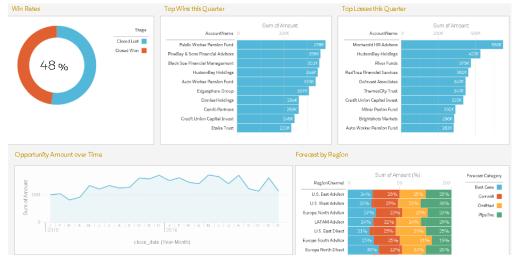
| Summary     |                |          |                         |
|-------------|----------------|----------|-------------------------|
| 123,332,969 | 86,542,563,143 | 29       | 701.70 mi               |
| Flights     | Miles Flown    | Carriers | Average Flight Distance |

- Group filters together at the top or left so that they are quickly noticeable. You can use a container widget to section them off
  in the dashboard.
- Keep in mind that a chart in Analytics is primarily a way to ask questions, not a way to illustrate a conclusion. A good dashboard
  invites the audience to drill down and seek ever more focused and useful information.
- Choose chart types based on the characteristics of the data, not for look or variety. For example, if most of your charts display value changes over time, it's OK if they're all line graphs.
- If a chart seems to need a lengthy caption or title, reconsider whether the chart is doing its job. Well-chosen data often speaks for itself.

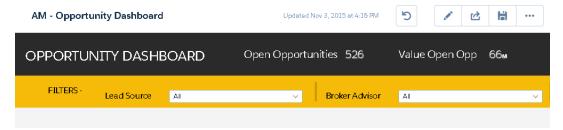
Use container widgets to frame and organize related elements in the dashboard.



- While you build the dashboard:
  - Apply labels to sections and charts to annotate the dashboard.



Use colors to define sections.



- Don't clutter the dashboard—leave some empty space. If needed, break a dashboard into a series of dashboards, using link widgets to help the user navigate them.
- After you build the dashboard:
  - Have users review the dashboard before making it final. You can post a dashboard to Chatter to get feedback. Users can annotate
    the widgets in the dashboard to have conversations about the content.

# SEE ALSO:

Build Analytics Dashboards
Build a Dashboard with the Classic Designer

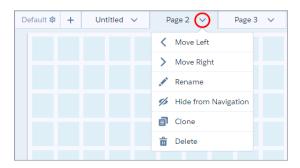
# Create Dashboard Pages

Make the information on a dashboard easier to digest by chunking the content into multiple pages. With pages, you can tell a story by creating a dynamic pathway through your dashboard. Depending on how you lay out your pages, you can create some cool effects as you transition from one page to the next. And because a page has fewer queries, dashboard performance increases.

Share widgets, steps, global filters, and selections across pages to keep the same focus as you go from one page to the next. For example, a selection in one page also filters the results of the other pages.

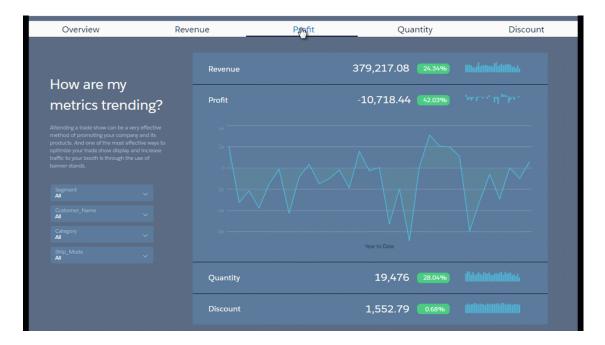
Pages apply to the layout in which they're created. When you create a layout, all pages in the current layout are copied to the new layout.

- To add another page, click +.
   Each page appears as a separate tab. You can add up to 20 pages per dashboard. When you preview a page, it looks just like a dashboard.
- 2. Click venext to a page to configure it, like rename it or hide it from the navigation widget when a user views the dashboard.



3. To enable pages to link to each other, add a navigation widget that contains a tab for each visible page.

When a navigation widget is added, mobile users can no longer swipe to access other pages—they must use the navigation widget.

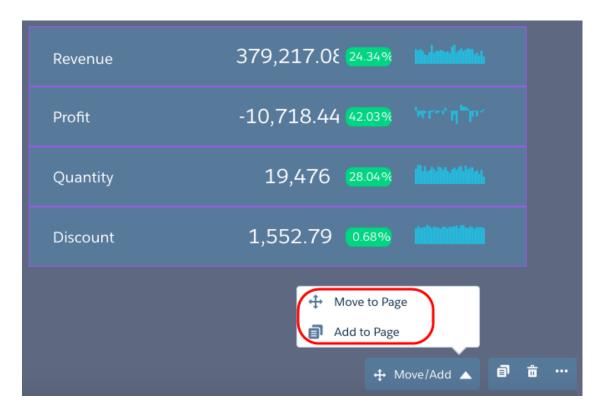


- Note: If you don't add a navigation widget, mobile app users swipe to get to the next page. Use the **Move Left** and **Move Right** actions to reorder the pages.
- **4.** To create a specific path where viewers can only navigate to a specific page, add a link widget. In the link widget properties, select **Page in Layout** in the Link To field and the page name in the Page field.



5. To share widgets on other pages, select the widgets, click **Add to Page**, and then specify the pages.

For example, use it to add the navigation widget to all pages. When you use the Add to Page option to add a widget to another page, you add an instance of the same widget to the page. Basically the widget is shared across both pages, making it easier to maintain. The styling properties you set for the widget reflects across all pages.



- **6.** If needed, repeat these steps to set up pages for other layouts.
- **7.** Save the dashboard to save changes to pages.

### IN THIS SECTION:

### Manage Widgets on a Page

You can move widgets to another page. To share them and their steps across pages, add them to other pages. If you no longer need a widget, delete it from the page.

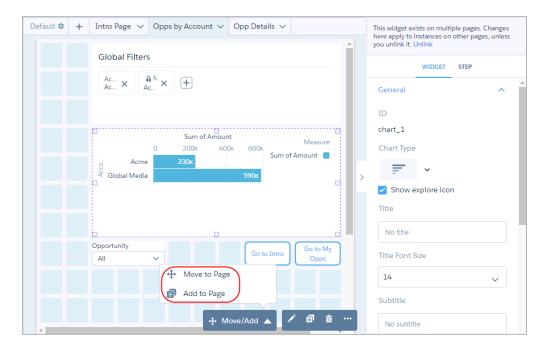
#### SEE ALSO:

Add a Link Widget to Link to Other Assets

# Manage Widgets on a Page

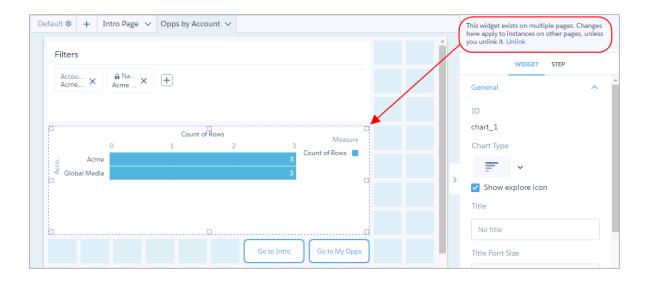
You can move widgets to another page. To share them and their steps across pages, add them to other pages. If you no longer need a widget, delete it from the page.

1. To move a widget to another page, select the widget, click **Move/Add** in the widget actions menu, and then click **Move to Page**.



2. To add a widget to another page, select Add to Page.

When you add a widget from one page to another, Analytics adds an instance of the same widget. If you change a widget property on one page, it affects all instances on other pages. If a widget is used in multiple pages, dashboard designer highlights the widget in purple and adds a banner in the right pane when you select it.



- 3. To make a widget work independently from other instances, select the widget, and then click **Unlink** in the banner.
- **4.** To delete a widget from the page, select the widget, and then press the Delete key. If you delete a widget from a page:
  - and the widget is used in other pages, Analytics removes the widget only from the current page.
  - and the widget isn't used in other pages but is used in other layouts, Analytics removes it from the page and current layout.
  - and the widget isn't used in other pages or layouts, Analytics deletes it from the dashboard.
- **5.** To save your changes, save the dashboard.

# Add Widgets to the Dashboard

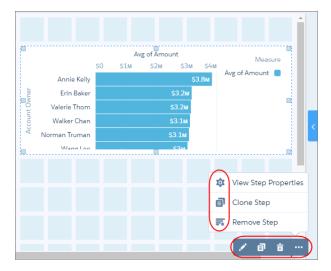
Widgets are the basic building blocks of a dashboard. In the dashboard designer, you can add different widgets to perform functions. For example, widgets can calculate key performance indicators, filter dashboard results, visualize your data using interactive charts, and show record-level details in tables.

Watch a Demo: Get to Know Wave Dashboard Widgets (English Only)

Widgets that display data require a step. A widget determines how to use or display the results returned by a step. For example, a step calculates the average opportunity amount, grouped by region. A bar chart widget displays the results in a bar chart format with each bar showing the average opportunity amount for a region. If the step is faceted, when you select a bar in the chart, other widgets are filtered, showing results for only the selected region.

Most widgets have a wizard that you can use to build the widget, including the underlying step. You can also build your own step and apply it to a widget. Multiple widgets can use the same step, unless it's a date or range widget. In that case, no other widgets can use the step.

Clone widgets to create similar looking components in an Analytics dashboard. For example, you can clone a chart widget and change the chart type to get a different view of the same results. When you clone a widget, you also clone its step. You can also quickly create three number widgets by cloning one of them and modifying their steps' filters to show total open, total won, and total lost opportunity amounts. To clone widgets, remove steps, clone steps, and view step properties, select the widget while editing the dashboard, and then click the appropriate button.



To configure how a widget appears, set the properties in the Widget tab. For example, you can show data values and the axis title for a chart widget. You can also apply default properties to ensure that widgets look consistent, like having the same border and background color.

To configure how the widget behaves, set step properties in the Step tab. For example, you can choose which measure to display in the widget when its step contains multiple measures. Changes to step properties impact all widgets that are built on the step.

#### IN THIS SECTION:

#### Add Number Widgets to Include Key Metrics

Key metrics help you track critical measurements of your business. You can add other widgets to the Analytics dashboard to filter the key metric results to focus on a particular area. For example, you can show the total number of open cases or total opportunity amount for the last quarter or the northern region.

### Add Chart Widgets to Visualize Data

Charts in an Analytics dashboard allow you to visually summarize and trend your data. For example, a donut chart can show the distribution of opportunities across industry type.

#### Add a Global Filter Panel Widget to Filter Data from the Dashboard

The panel can contain multiple global filters. Use a global filter to apply the same filter to multiple steps in the dashboard. For example, a dashboard has two charts comparing two sales reps' performance. To compare apples to apples, both charts must have the same filters. When possible, use a global filter instead of a selection-based filter to improve dashboard performance. If configured, users can change a global filter while viewing the dashboard.

### Add Selection-Based Filter Widgets to Enable Users to Filter the Results

Users viewing the dashboard can make selections in these types of widgets, which filter the results of other faceted widgets. Selection-based filter widgets give users the ability to slice and dice the data to view results from different angles. For example, the dashboard viewer can select a region in a list widget to focus the dashboard results on a specific sales location. Unlike with a filter defined in a step's query, the viewer can filter the results differently (by making another selection) or remove the filter altogether.

### Add a Table Widget to Show Record Details and Create Calculated Columns

You can add different types of tables to an Analytics dashboard. To view record-level details, add a values table. A values table can show record-level details, like how long a case has been open and who owns it. To create custom columns in a table based on calculations from existing fields, add a compare table. If the underlying step contains at least one grouping, you can create a pivot table.

### Add a Container Widget to Create Sections in the Dashboard

Use a container in an Analytics dashboard to group related widgets. For example, you can use a container widget to create a filter panel on the left side of the dashboard to store all selection-based filter widgets. To distinguish the filter panel from the rest of the dashboard, you can apply a background color and border to the container. When you move this widget, the contained widgets also move while maintaining their spacing and alignment.

## Add an Image Widget to Display Graphics in the Dashboard

You can include company logos to brand the Analytics dashboard, icons to categorize results, or graphics to animate the dashboard.

### Add Text Widgets to Label Parts of the Dashboard

Label your Analytics dashboard so that users understand what they are looking at. You can also add text that describes the dashboard or provides usage information for widgets.

# Add a Navigation Widget to Access Dashboard Pages

Add a navigation widget to an Analytics dashboard page to provide a way for dashboard viewers to access the other pages. Copy this widget to all pages in a dashboard.

## Add a Link Widget to Link to Other Assets

Instead of packing all possible key performance metrics, charts, and tables into a single dashboard, break up the content into multiple dashboards. Then use link widgets to tie the dashboards together. Dashboard viewers appreciate not having to figure out what to focus on in a busy dashboard. Also, use links to create analysis paths for users to follow or to link related assets, like dashboards, pages, steps, lenses, and even web pages.

### Widget Properties for Analytics Dashboards

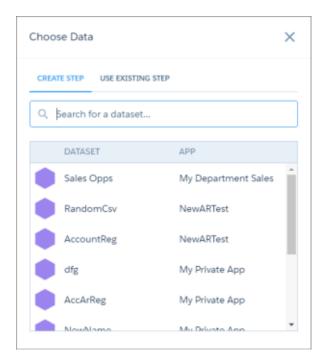
Widget properties define how widgets appear in the Analytics dashboard. For example, you can apply labels, backgrounds, and borders. To make widgets look consistent, you can set up default widget properties in the layout and then assign them to each widget. Widget properties vary based on the widget type and the designer used to create them. The properties listed here apply only to widgets created in the dashboard designer.

# Add Number Widgets to Include Key Metrics

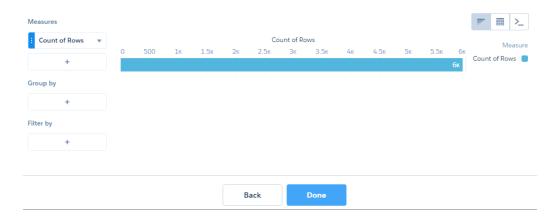
Key metrics help you track critical measurements of your business. You can add other widgets to the Analytics dashboard to filter the key metric results to focus on a particular area. For example, you can show the total number of open cases or total opportunity amount for the last quarter or the northern region.

The number widget requires a step that has at least one measure. If the step has multiple measures, you can choose which measure to display in the widget properties—by default, the first measure shows. If you include groupings, the widget displays the measure for the first group in the first defined grouping.

- 1. Drag the number widget to the dashboard canvas.
- **2.** To open the wizard, click the button inside the widget. One of the following screens appears.
  - The Choose Data screen appears, showing the most recently used datasets first. Select the dataset in the Create Step tab or select an existing step in the Use Existing Step tab.



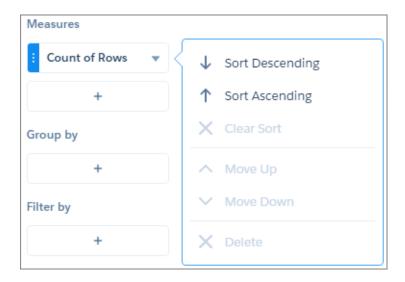
• The explorer appears, showing a bar chart with the Count of Rows measure. Analytics selects the dataset that you used to create the previous step. To use a different dataset or an existing step, click **Back**.



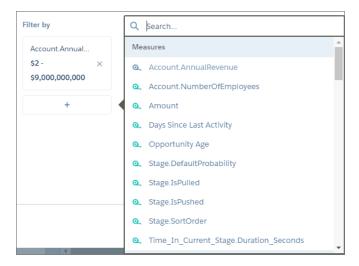
### **3.** To create a step:

- **a.** In the explorer, click **Untitled Step** and enter the step label.

  Analytics creates the step ID from the label. After you create the step, you can't change the step ID. Analytics refers to steps by their ID so dashboards don't break if you change the labels.
- b. To add a measure, click + under Measures.To change a measure, select the measure and then choose a new one. To sort, reorder, or delete a measure, click the down arrow to the right of the measure and select the option.



**c.** To add a filter, click + under Filter by, and then select the field to filter by. You can add multiple filters. To delete the filter, click  $\times$ .

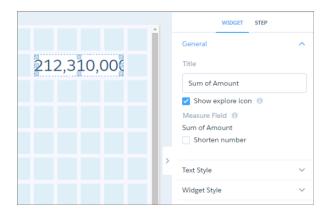


### d. Click Done.

Analytics adds the step to the steps panel, making it available for use by other widgets in the dashboard. In addition, the widget shows the calculated measure.

**4.** To change the widget and step properties, select the widget.

The Widget panel groups the widget properties into sections. So that you don't accidentally overlook any properties, expand any collapsed sections.



For example, to shorten the number that appears in the widget, select **Shorten number** in the widget properties. Check out the unit symbols for shortened numbers.

| Symbol | Unit                   | Example                                   |
|--------|------------------------|---|
| K      | Thousand (10^3)        | 4K = 4,000                                |
| М      | Million (10^6)         | 4M = 4,000,000                            |
| В      | Billion (10^9)         | 4B = 4,000,000,000                        |
| Т      | Trillion (10^12)       | 4T = 4,000,000,000,000                    |
| Р      | Quadrillion (10^15)    | 4P = 4,000,000,000,000,000                |
| Χ      | Quintillion (10^18)    | 4X= 4,000,000,000,000,000                 |
| Z      | Sextillion (10^21)     | 4Z = 4,000,000,000,000,000,000            |
| Υ      | Septillion (10^24)     | 4Y = 4,000,000,000,000,000,000,000        |
| m      | Thousandth (10^-3)     | 4m = 0.004                                |
| μ      | Millionth (10^-6)      | $4\mu = 0.000004$                         |
| n      | Billionth (10^-9)      | 4n = 0.000000004                          |
| р      | Trillionth (10^-12)    | 4p = 0.000000000004                       |
| f      | Quadrillionth (10^-15) | 4f = 0.000000000000004                    |
| a      | Quintillionth (10^-18) | 4a = 0.0000000000000000000000000000000000 |
| Z      | Sextillionth (10^-21)  | 4z = 0.0000000000000000000000000000000000 |
| у      | Septillionth (10^-24)  | 4y = 0.0000000000000000000000000000000000 |

- **5.** To customize the appearance of the widget, set the widget properties. When you set a property, the widget immediately shows the effects of your change.
- **6.** To show and set the step properties, click **Step** in the right panel.

- 7. To preview your changes to the dashboard, click .
- **8.** Save the dashboard.

#### SEE ALSO:

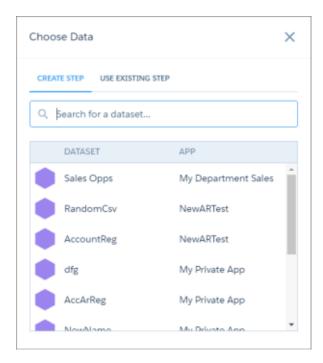
Widget Properties for Analytics Dashboards Step Properties for Analytics Dashboards Manage Steps for Widgets

# Add Chart Widgets to Visualize Data

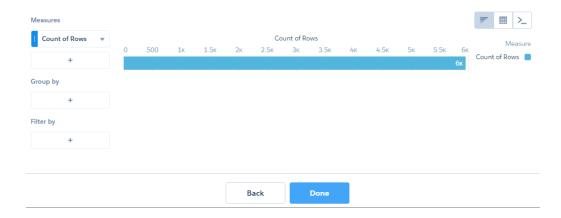
Charts in an Analytics dashboard allow you to visually summarize and trend your data. For example, a donut chart can show the distribution of opportunities across industry type.

Analytics supports multiple chart types. Each type has unique widget properties and step requirements. For details about each chart type, see Visualizing Data With Charts.

- 1. Drag the chart widget to the dashboard canvas.
- **2.** To open the wizard, click the button inside the widget. One of the following screens appears.
  - The Choose Data screen appears, showing the most recently used datasets first. Select the dataset in the Create Step tab or select an existing step in the Use Existing Step tab.



• The explorer appears, showing a bar chart with the Count of Rows measure. Analytics selects the dataset that you used to create the previous step. To use a different dataset or an existing step, click **Back**.

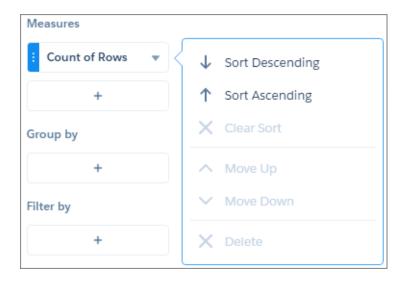


### **3.** To create a step:

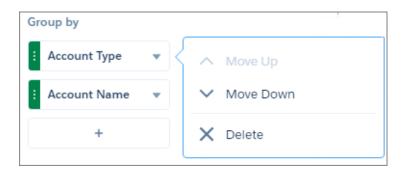
- **a.** In the explorer, click **Untitled Step** and enter the step label.

  Analytics creates the step ID from the label. After you create the step, you can't change the step ID. Analytics refers to steps by their ID so dashboards don't break if you change the labels.
- **b.** To add a measure, click + under Measures.

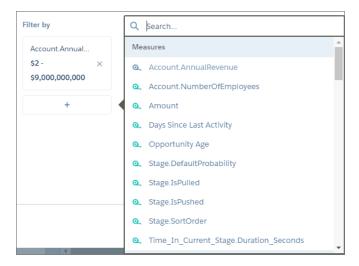
To change a measure, select the measure and then choose a new one. To sort, reorder, or delete a measure, click the down arrow to the right of the measure and select the option.



**c.** To group the measures by a date or dimension, click + under Group by, and then select the field. You can add multiple groupings. To change a grouping, click the grouping and select a new field. To reorder or delete a grouping, click the down arrow to the right of the grouping and then select the option.



**d.** To add a filter, click + under Filter by, and then select the field to filter by. You can add multiple filters. To delete the filter, click  $\times$ .



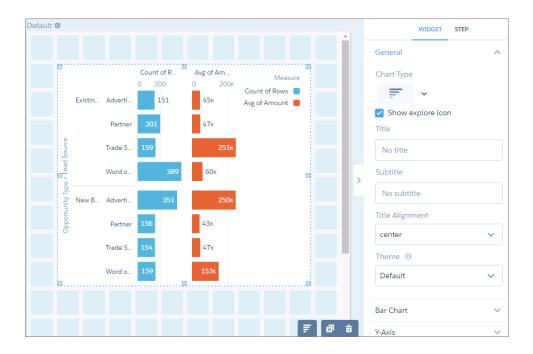
- To change the chart type, click and the select the new one.

  Although Analytics saves the chart type with the step, you can override the chart type at the widget level by specifying a different chart in the widget properties. Setting the chart type at the widget level is useful when you use the same step for multiple widgets, but want to display the results differently in each widget.
- **f.** Click **Done**.

Analytics adds the step to the steps panel, making it available for use by other widgets in the dashboard. In addition, the widget shows the results in a bar chart.

**4.** To change the widget and step properties, select the widget.

The Widget panel groups the widget properties into sections. So that you don't accidentally overlook any properties, expand any collapsed sections.



- **5.** To customize the appearance of the widget, set the widget properties. For example, select a different chart type in the Chart Type widget property.
- **6.** To show and set the step properties, click **Step** in the right panel. For example, to enable this widget to filter other faceted widgets, select **Broadcast selections as facets**.

While viewing the dashboard, a user can select a segment of a chart to filter the results of other faceted widgets. To allow the viewer to make single or multiple selections, configure this widget's step properties. You can specify whether selections are optional or required. You can also set an initial selection that applies when the dashboard opens. While viewing the dashboard, viewers can undo the selection or change the selection to filter the results differently. For information about setting an initial selection, see Set Initial Selections in the Dashboard.

- **7.** To preview your changes to the dashboard, click .
- **8.** Save the dashboard.

#### IN THIS SECTION:

#### Project the Same Step Results Differently in Charts and Tables

If charts and tables use the same step, each widget can show a different set of fields from the step results. You can also specify a different field order for each widget. For example, to change the measure that appears on each axis in a scatter plot, reorder the measures for that widget.

# SEE ALSO:

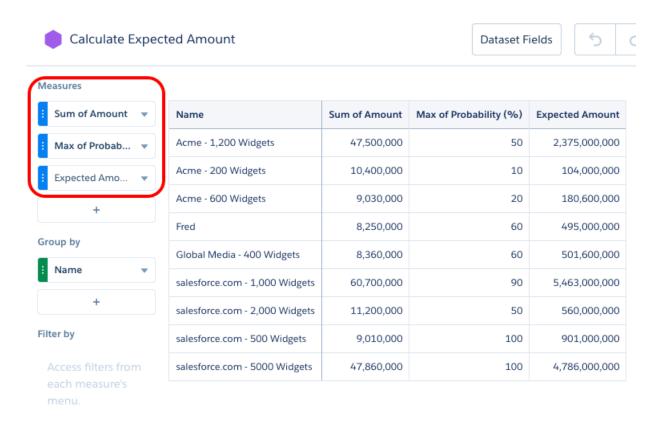
Widget Properties for Analytics Dashboards Step Properties for Analytics Dashboards Manage Steps for Widgets

# Project the Same Step Results Differently in Charts and Tables

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If charts and tables use the same step, each widget can show a different set of fields from the step results. You can also specify a different field order for each widget. For example, to change the measure that appears on each axis in a scatter plot, reorder the measures for that widget.

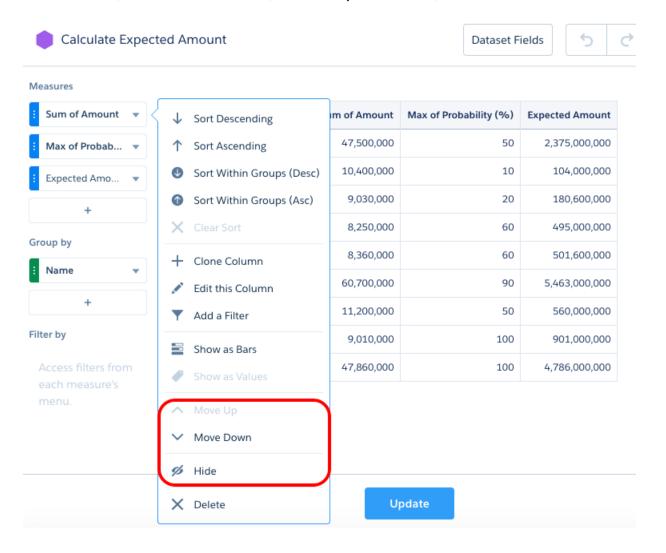
The following compare table step shows multiple measures grouped by a dimension. The Expected Amount measure is calculated based on the other two measures: Amount \* Probability.



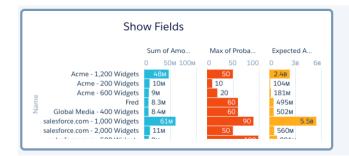
The following compare table step shows multiple measures grouped by a dimension. The Expected Amount measure is calculated based on the other two measures: Amount \* Probability.



To show only the Expected Amount and Name fields for this widget, edit the widget and then select **Hide** for the other measures. (To show a hidden field, select **Show**. To reorder a field, select **Move Up** or **Move Down**.)



The following screenshot shows two charts based on the same step. The second chart shows the effect of hiding the other two measures.



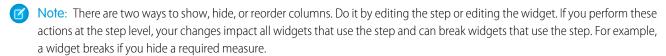


The **Show** and **Hide** options are only available for aggregateflex (for compare tables) and saql step types. To show or hide fields for tables or charts based on other step types, configure the widget properties in the dashboard JSON. Add a "columns" attribute and specify the API names of the fields that you want to appear in the widget.

```
"chart_2": {
    "parameters": {
        "columns": [ "Name", "C" ],
        "visualizationType": "hbar",
        "step": "Amount_Prob_1",
        ...
    },
    "type": "chart",
    ...
}
```

Consider the following guidelines when configuring the "columns" JSON property.

- If fields are listed in "columns" and you add a measure or grouping to the step, the new field doesn't appear in the widget until you add it to "columns."
- If "columns" is not specified in the widget properties or is set to an empty array, the widget shows all fields available in the step results.
- Analytics ignores fields specified in "columns" that don't exist in the step. If none of the fields in "columns" exist in the step, the widget doesn't show any fields.
- The order in which you specify fields in "columns" is the order in which they appear in the widget.



### SEE ALSO:

Add Chart Widgets to Visualize Data

Add a Table Widget to Show Record Details and Create Calculated Columns

# Add a Global Filter Panel Widget to Filter Data from the Dashboard

The panel can contain multiple global filters. Use a global filter to apply the same filter to multiple steps in the dashboard. For example, a dashboard has two charts comparing two sales reps' performance. To compare apples to apples, both charts must have the same filters. When possible, use a global filter instead of a selection-based filter to improve dashboard performance. If configured, users can change a global filter while viewing the dashboard.

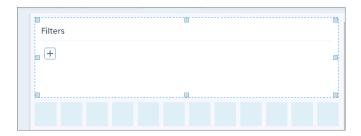
Each global filter must be based on a single measure, dimension, or date field. You can't create a composite filter based on multiple fields, like Region="West" and Industry= "CPG."

If multiple datasets are linked using a data source connection, only one of the common fields used in the connection can be included in a global filter. If you include multiple common fields, they can generate redundant, conflicting filters and not work properly. For example, you connect the Opportunity dataset using the Account.Name field to the Account dataset using the corresponding Name field. To filter based on account name, add one global filter based on either Account.Name from the Opportunity dataset or Name from the Account dataset. Because the datasets are connected, the global filter applies to both datasets.

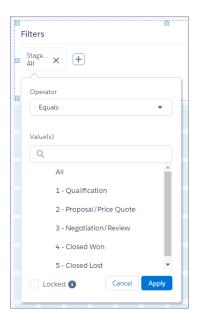
Global filters only apply to widgets that accept them. To apply global filters to a widget, select **Apply global filters** in the step properties of the widget. By default, Analytics applies global filters to all widgets that have steps that are based on the same dataset.

1. Drag the global filter panel widget to the dashboard canvas.

An empty panel appears in the designer.



- Note: If the dashboard contains a global filter created before Winter '18, a pop-up message asks if you want Analytics to convert it to the new version. If you agree, Analytics converts all global filters to the new design, showing all global filters in a panel. During the conversion, Analytics doesn't add unsupported global filters to the new global filter panel widget. Unsupported global filters are composite filters and invalid ones that reference datasets or fields that don't exist. If you don't convert to the new design, you can continue to use the legacy global filter, but can't add global filters to the dashboard.
- 2. To add a global filter to the panel:
  - a. Click +.
  - b. Select a dataset field and click Create.To use a different dataset, click Change Dataset.
  - **c.** Select the filter operator and field values. These filters apply when a user opens the dashboard.

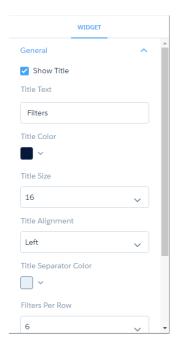


**d.** To prevent users viewing the dashboard from changing the global filter, select **Locked**.

The Locked option also ensures that incoming filters passed from a linked dashboard don't override the global filter. If the global filter is locked and the incoming filter is defined on the same field, Analytics ignores the incoming filter. If it's unlocked, the incoming filter overrides the global filter defined in the dashboard.

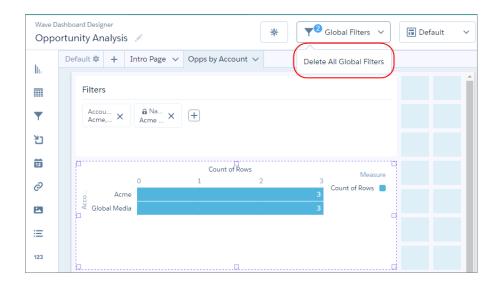
- e. Click Apply.
- **3.** To change the widget properties, click the widget.

The Widget panel groups the widget properties into sections. So that you don't accidentally overlook any properties, expand any collapsed sections.



**4.** To customize the appearance of the widget, set the widget properties. When you set a property, the widget immediately shows the effects of your change.

- To edit a global filter in the panel, click it.For example, you might edit a global filter to change the selections.
- **6.** To delete a global filter from the panel, click X.
- 7. To delete all global filters from the dashboard, while editing the dashboard, click the down arrow inside the Global Filters button, and then click **Delete All Global Filters**.



- Note: If you delete the global filter panel widget, Analytics removes the panel from the dashboard, but the global filters still apply. To delete the global filters, use this procedure.
- **8.** To preview your changes to the dashboard, click .
- 9. Save the dashboard.

#### SEE ALSO:

Widget Properties for Analytics Dashboards Step Properties for Analytics Dashboards Manage Steps for Widgets

# Add Selection-Based Filter Widgets to Enable Users to Filter the Results

Users viewing the dashboard can make selections in these types of widgets, which filter the results of other faceted widgets. Selection-based filter widgets give users the ability to slice and dice the data to view results from different angles. For example, the dashboard viewer can select a region in a list widget to focus the dashboard results on a specific sales location. Unlike with a filter defined in a step's query, the viewer can filter the results differently (by making another selection) or remove the filter altogether.

A selection-based filter is different from a query filter. When a selection is made, all values in the step's original query still appear in the widget, just with particular values highlighted. However, a query filter modifies the step's query, reducing the number of results that appear in the widget. A global filter is a query filter that can be applied to multiple steps in a dashboard.



The following illustration shows the difference between a selection and a query filter on the same step.

You can create different types of selection-based filter widgets based on measure, date, and dimension fields. You can also set an initial selection for each of them. For example, when the viewer opens the dashboard, the date widget can select last year, by default, to show dashboard results for last year only.

# IN THIS SECTION:

### Add a Date Widget to Filter Dashboard Results Based on a Date

A date filter widget allows dashboard viewers to filter the Analytics dashboard results based on a selected date range. The range can use relative dates based on UTC (like 2 years ago), absolute dates (like 1/15/2016), or presets (like Current Fiscal Year To Date). For example, you can add a date widget to filter support cases, showing only cases that closed this month or last month.

### Add a List Widget to Filter Dashboard Results Based on a Dimension

A list filter widget allows dashboard viewers to filter the Analytics dashboard results based on a dimension. For example, a list widget can filter results based on a particular case status or region.

## Add a Range Widget to Filter Dashboard Results Based on a Measure

A range widget allows dashboard viewers to filter the Analytics dashboard results based on a range of values for a measure. For example, a range widget can show only opportunities with amounts between \$100,000 and \$900,000.

### Add a Toggle Widget to Filter Dashboard Results Based on a Dimension

A toggle widget allows dashboard viewers to filter the Analytics dashboard results based on a date or dimension. For example, a toggle widget can show results based on a specific record type.

#### SEE ALSO:

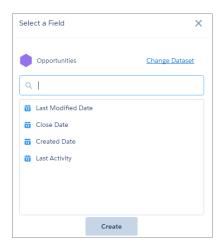
Set Initial Selections in the Dashboard

# Add a Date Widget to Filter Dashboard Results Based on a Date

A date filter widget allows dashboard viewers to filter the Analytics dashboard results based on a selected date range. The range can use relative dates based on UTC (like 2 years ago), absolute dates (like 1/15/2016), or presets (like Current Fiscal Year To Date). For example, you can add a date widget to filter support cases, showing only cases that closed this month or last month.

The date widget requires a step that has a single grouping based on a date field.

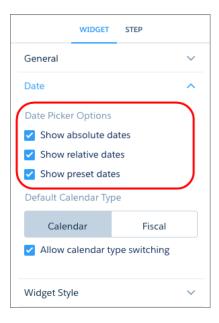
- 1. Drag the date widget to the dashboard canvas.
- **2.** To open the wizard, click the button inside the widget. The Select a Field screen appears, showing a list of all date fields in the specified dataset.



- **3.** To use a different dataset, click **Change Dataset**.
- **4.** Select the date field that you want to filter on.
- 5. Click Create.

Behind the scenes, Analytics creates a step grouped by the field that you selected. Analytics adds the step to the steps panel, but you can't reuse it in other widgets. Analytics doesn't apply any selections to the widget, by default.

- **6.** To change the widget and step properties, select the widget.
  - The Widget panel groups the widget properties into sections. So that you don't accidentally overlook any properties, expand any collapsed sections.
- 7. In the widget properties, specify whether to show absolute, relative, or preset dates, select the default calendar type, and specify whether users can switch calendar types while viewing the dashboard.



- Note: If you enable absolute and relative dates, absolute dates show, by default. To show relative dates, by default, set an initial selection based on a relative date.
- **8.** To show and set the step properties, click **Step** in the right panel. For example, to enable this widget to filter other faceted widgets, select **Broadcast selections as facets**.
- **9.** To preview your changes to the dashboard, click **...**
- 10. Save the dashboard.

You can set an initial selection that applies when the dashboard opens. The selected range filters other faceted widgets. While viewing the dashboard, viewers can change the selection to filter the results differently. For information about setting an initial selection, see Set Initial Selections in the Dashboard.

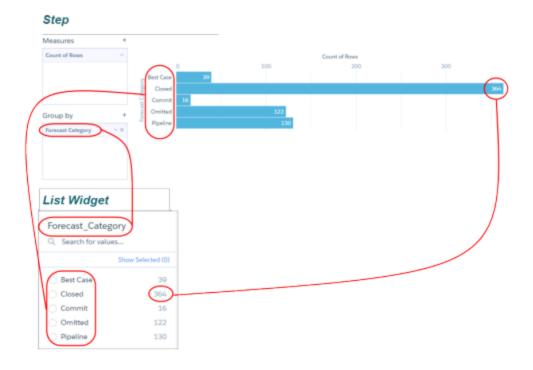
#### SEE ALSO:

Widget Properties for Analytics Dashboards Step Properties for Analytics Dashboards Manage Steps for Widgets

### Add a List Widget to Filter Dashboard Results Based on a Dimension

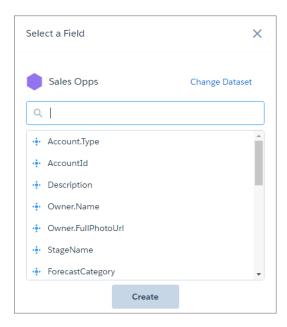
A list filter widget allows dashboard viewers to filter the Analytics dashboard results based on a dimension. For example, a list widget can filter results based on a particular case status or region.

The list widget requires a step that has a single grouping based on a dimension. The values of the grouping appear as the values in the list.



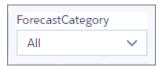
- Note: You can also create a static step to specify a custom list of values for the list widget. For more information, see Create a Static Step with Custom Values.
- 1. Drag the list widget to the dashboard canvas.
- **2.** To open the wizard, click the button inside the widget.

  The Select a Field screen appears, showing a list of all dimension fields in the specified dataset.

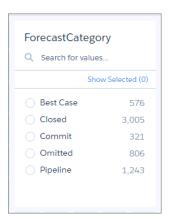


- **3.** To use a different dataset, click **Change Dataset**.
- **4.** Select the date field that you want to filter on.
- 5. Click Create.
  - 1 Tip: To create a user-defined list of values instead of using values from a dataset, click **Customize**.

Behind the scenes, Analytics creates a step grouped by the field that you selected. Analytics adds the step to the steps panel, making it available for use by other widgets in the dashboard. In addition, by default, the list widget is collapsed and Analytics doesn't apply any selections to the widget.

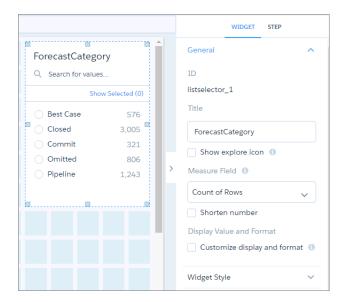


**6.** To expand the list and show more values, increase the size of the widget.



- Note: If you don't expand the list, when a user views the dashboard, they can select the drop-down arrow to see the values in the list.
- 7. To change the widget and step properties, select the widget.

The Widget panel groups the widget properties into sections. So that you don't accidentally overlook any properties, expand any collapsed sections.



- **8.** To customize the appearance of the widget, set the widget properties. When you set a property, the widget immediately shows the effects of your change.
- To show and set the step properties, click Step in the right panel.
   For example, to enable this widget to filter other faceted widgets, select Broadcast selections as facets.

While viewing the dashboard, a user can select a dimension in this widget to filter other faceted widgets. To allow the viewer to make single or multiple selections, configure this widget's step properties. You can specify whether selections are optional or required. You can also set an initial selection that applies when the dashboard opens. While viewing the dashboard, viewers can undo the selection or change the selection to filter the results differently. For information about setting an initial selection, see Set Initial Selections in the Dashboard.

- **10.** To preview your changes to the dashboard, click **o** .
- 11. Save the dashboard.

#### SEE ALSO:

Widget Properties for Analytics Dashboards Step Properties for Analytics Dashboards Manage Steps for Widgets

# Add a Range Widget to Filter Dashboard Results Based on a Measure

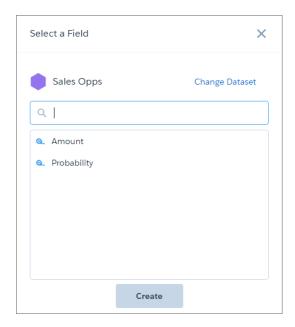
A range widget allows dashboard viewers to filter the Analytics dashboard results based on a range of values for a measure. For example, a range widget can show only opportunities with amounts between \$100,000 and \$900,000.

The range widget requires a step that has a single measure and no groupings.



- 1. Drag the range widget to the dashboard canvas.
- **2.** To open the wizard, click the button inside the widget.

  The Select a Field screen appears, showing a list of all measure fields in the specified dataset.

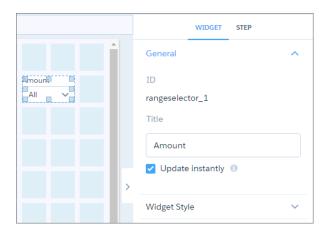


- **3.** To use a different dataset, click **Change Dataset**.
- **4.** Select the date field that you want to filter on.
- 5. Click Create.

Behind the scenes, Analytics creates a step with the measure that you selected. Analytics adds the step to the steps panel, but you can't reuse it in other widgets. Analytics doesn't apply any selections to the widget.

**6.** To change the widget and step properties, select the widget.

The Widget panel groups the widget properties into sections. So that you don't accidentally overlook any properties, expand any collapsed sections.



- **7.** To customize the appearance of the widget, set the widget properties. When you set a property, the widget immediately shows the effects of your change.
- **8.** To show and set the step properties, click **Step** in the right panel. For example, to enable this widget to filter other faceted widgets, select **Broadcast selections as facets**.

**9.** To preview your changes to the dashboard, click . The default range shown is the minimum to the maximum values of the measure.

#### 10. Save the dashboard.

You can set an initial selection that applies when the dashboard opens. The selected range filters other faceted widgets. While viewing the dashboard, viewers can change the selection to filter the results differently. For information about setting an initial selection, see Set Initial Selections in the Dashboard.

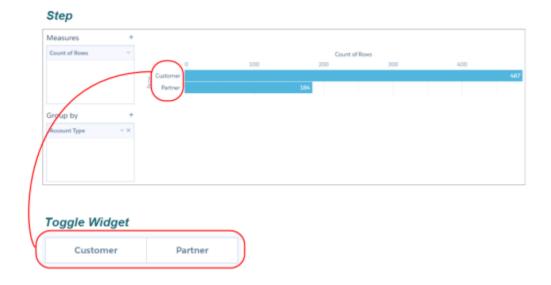
#### SEE ALSO:

Widget Properties for Analytics Dashboards Step Properties for Analytics Dashboards Manage Steps for Widgets

# Add a Toggle Widget to Filter Dashboard Results Based on a Dimension

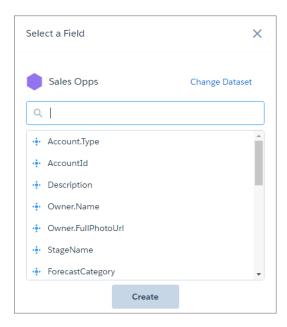
A toggle widget allows dashboard viewers to filter the Analytics dashboard results based on a date or dimension. For example, a toggle widget can show results based on a specific record type.

The toggle widget requires a step that has a single grouping based on a dimension. The values of the grouping appear as the toggle options.



- Note: You can also create a static step to specify a custom list of values for the toggle widget. For more information, see Create a Static Step with Custom Values.
- 1. Drag the toggle widget to the dashboard canvas.
- **2.** To open the wizard, click the button inside the widget.

  The Select a Field screen appears, showing a list of all dimension fields in the specified dataset.



- **3.** To use a different dataset, click **Change Dataset**.
- **4.** Select the date field that you want to filter on.
- 5. Click Create.

Behind the scenes, Analytics creates a step grouped by the field that you selected. Analytics adds the step to the steps panel, making it available for use by other widgets in the dashboard. Analytics doesn't apply any selections to the widget.

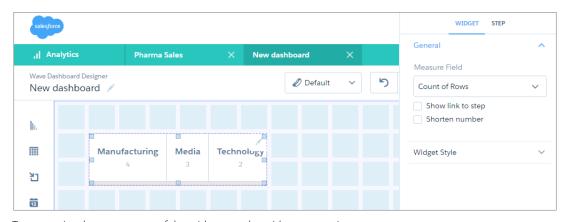


**6.** If needed, increase the size of the widget to show the display names of all toggle options.



7. To change the widget and step properties, select the widget.

The Widget panel groups the widget properties into sections. So that you don't accidentally overlook any properties, expand any collapsed sections.



- **8.** To customize the appearance of the widget, set the widget properties. When you set a property, the widget immediately shows the effects of your change.
- To show and set the step properties, click Step in the right panel.
   For example, to enable this widget to filter other faceted widgets, select Broadcast selections as facets.

While viewing the dashboard, a user can select a toggle option in this widget to filter other faceted widgets. To allow the viewer to make single or multiple selections, configure this widget's step properties. You can specify whether selections are optional or required. You can also set an initial selection that applies when the dashboard opens. While viewing the dashboard, viewers can undo the selection or change the selection to filter the results differently. For information about setting an initial selection, see Set Initial Selections in the Dashboard.

**10.** To preview your changes to the dashboard, click  $^{\odot}$  .

**11.** Save the dashboard.

#### SEE ALSO:

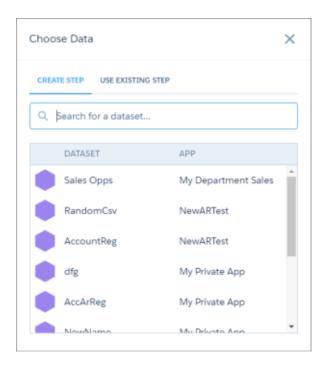
Widget Properties for Analytics Dashboards Step Properties for Analytics Dashboards Manage Steps for Widgets

## Add a Table Widget to Show Record Details and Create Calculated Columns

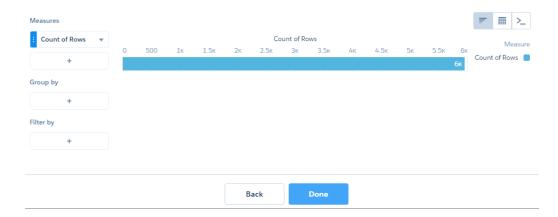
You can add different types of tables to an Analytics dashboard. To view record-level details, add a values table. A values table can show record-level details, like how long a case has been open and who owns it. To create custom columns in a table based on calculations from existing fields, add a compare table. If the underlying step contains at least one grouping, you can create a pivot table.

The steps vary depending on the type of table you create. For a values table, choose which dataset fields to show as columns. For a compare table, select which dataset fields to show as columns and define the calculations for custom columns. For a pivot table, define at least one grouping. The values of the last grouping appear as columns.

- 1. Drag the table widget to the dashboard canvas.
- **2.** To open the wizard, click the button inside the widget. One of the following screens appears.
  - The Choose Data screen appears, showing the most recently used datasets first. Select the dataset in the Create Step tab or select an existing step in the Use Existing Step tab.



• The explorer appears, showing a bar chart with the Count of Rows measure. Analytics selects the dataset that you used to create the previous step. To use a different dataset or an existing step, click **Back**.



- 3. To create a step:
  - **a.** In the explorer, click **Untitled Step** and enter the step label.

    Analytics creates the step ID from the label. After you create the step, you can't change the step ID. Analytics refers to steps by their ID so dashboards don't break if you change the labels.
  - **b.** .
  - **c.** Select and then choose the table type.

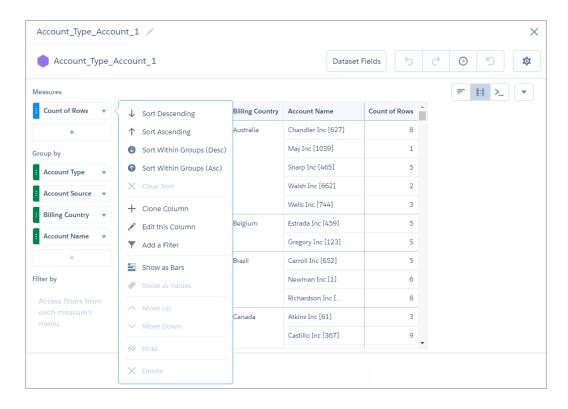
#### Values table

Use to show dataset fields as columns. You can add, remove, and reorder columns. You can also add filters.



#### Compare table

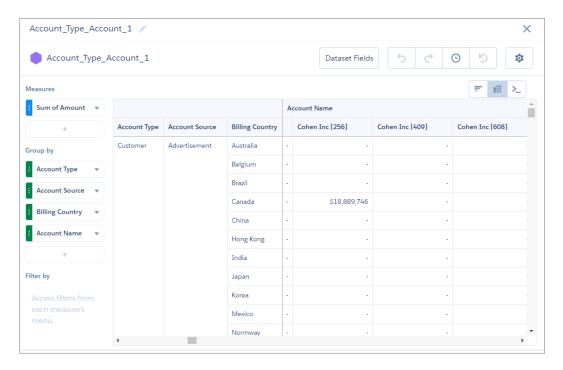
Use to add calculated columns to the table. By default, the table shows the previously selected measure as the first column. You can add measures and filters, and group by dimensions. To add a calculated column, click the down arrow next to a measure, and select **Clone Column** and then edit the new column.



For more information, see Creating Calculated Columns Using a Compare Table.

#### Pivot table

Use to show groupings on the x- and y-axes. The last grouping determines the columns, and the other groupings determine the rows. The pivot table shows the first specified measure in the table cells.



- **d.** To show totals in a values or compare table, click and then select **Show Summary**.
- **e.** To increase the number of records that appear in a values table, click and change the limit parameter in the SAQL query.
  - Note: By default, the query for a values table widget returns up to 100 results. For more information about the limit parameter, see Analytics SAQL Reference.

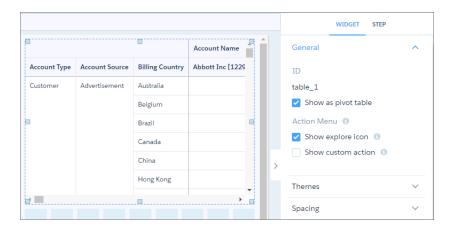


#### f. Click Done.

The widget shows the table and results. Analytics adds the step to the steps panel.

**4.** To change the widget and step properties, select the widget.

The Widget panel groups the widget properties into sections. So that you don't accidentally overlook any properties, expand any collapsed sections.

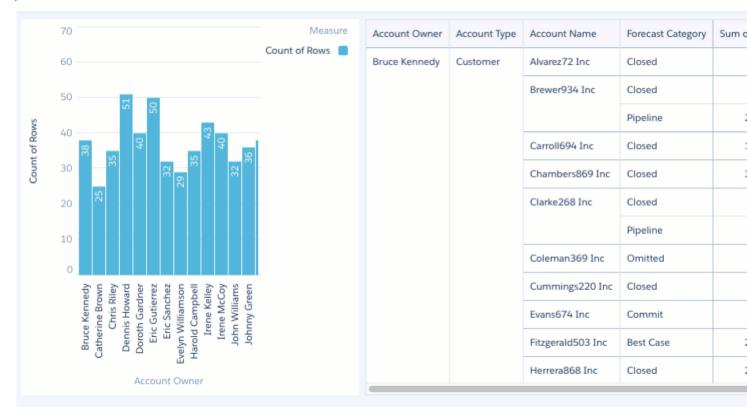


- **5.** To customize the appearance of the widget, set the widget properties. The widget properties vary based on the table type.
- **6.** To show and set the step properties, click **Step** in the right panel.
- 7. To preview your changes to the dashboard, click .
- 8. Save the dashboard.

While viewing a dashboard, a table's groupings appear in the left columns (1) and the measures appear in the right ones (2). Although the grouping columns are fixed, if needed, you can scroll across the measures. If your table isn't wide enough to display any measures,

**Build Analytics Dashboards** 

you won't see the scrollbar.



#### SEE ALSO:

Widget Properties for Analytics Dashboards

Step Properties for Analytics Dashboards

Manage Steps for Widgets

Project the Same Step Results Differently in Charts and Tables

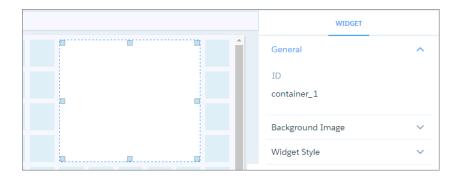
## Add a Container Widget to Create Sections in the Dashboard

Use a container in an Analytics dashboard to group related widgets. For example, you can use a container widget to create a filter panel on the left side of the dashboard to store all selection-based filter widgets. To distinguish the filter panel from the rest of the dashboard, you can apply a background color and border to the container. When you move this widget, the contained widgets also move while maintaining their spacing and alignment.

You can place any widget inside a container widget, except another container widget.

- **1.** Drag the container widget to the dashboard canvas. An empty container appears.
- 2. To change the widget properties, select the widget.

The Widget panel groups the widget properties into sections. So that you don't accidentally overlook any properties, expand any collapsed sections.



- **3.** To customize the appearance of the widget, set the widget properties. For example, apply a background color or image.
- **4.** Drag other widgets inside the container.

  You can increase the size of the container to fit more widgets.
- **5.** To preview your changes to the dashboard, click . . .
- **6.** Save the dashboard.

SEE ALSO:

Widget Properties for Analytics Dashboards

## Add an Image Widget to Display Graphics in the Dashboard

You can include company logos to brand the Analytics dashboard, icons to categorize results, or graphics to animate the dashboard.

To upload image files to Analytics, Chatter must be enabled in the org.

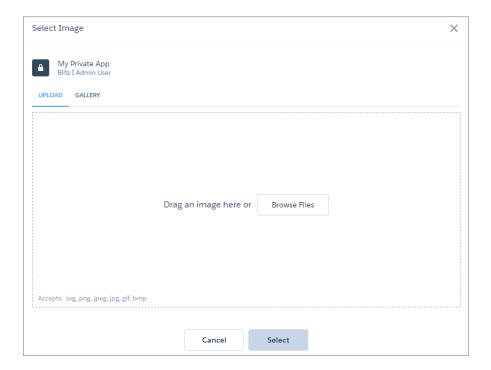
You can also add images as backgrounds for container widgets and layouts. Analytics in a web browser supports .svg, .png. jpeg, .jpg, .gif, .bmp. The Analytics mobile app supports all these file types, except .svg.

- Tip: To overlay one image on top of another, place an image widget inside a container widget. To display a background image for the entire dashboard, add a background image in the layout properties. Click in the upper left corner to show the layout properties.
- 1. Drag the image widget to the dashboard canvas.
- 2. Click **Image** inside the image widget.

## **USER PERMISSIONS**

To add images to Analytics dashboards:

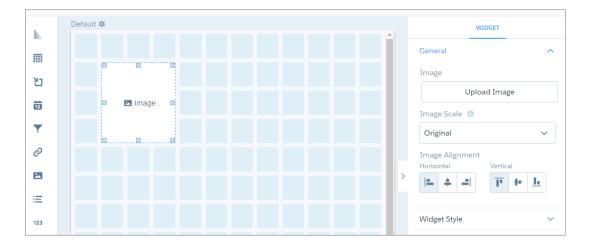
- Create Analytics Applications
- Create and Edit Analytics Dashboards



- **3.** To upload a new image, click **Browse Files**. Or, select an uploaded image from the Gallery tab.

  Analytics uploads images to the gallery for the app displayed at the top left corner of the screen. Each image file must be no more than 2 GB.
- **4.** To change the widget properties, select the widget.

  The Widget panel groups the widget properties into sections. So that you don't accidentally overlook any properties, expand any collapsed sections.



**5.** To preview your changes to the dashboard, click . .

**6.** Save the dashboard.

SEE ALSO:

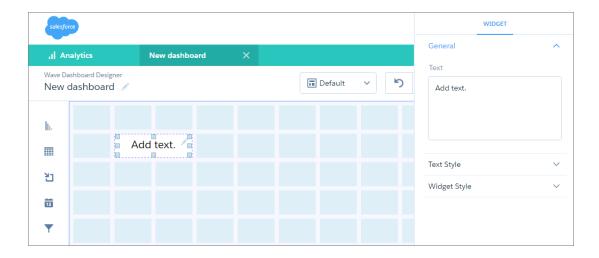
Widget Properties for Analytics Dashboards

### Add Text Widgets to Label Parts of the Dashboard

Label your Analytics dashboard so that users understand what they are looking at. You can also add text that describes the dashboard or provides usage information for widgets.

- **1.** Drag the text widget to the dashboard canvas.
- 2. To change the widget properties, select the widget.

The Widget panel groups the widget properties into sections. So that you don't accidentally overlook any properties, expand any collapsed sections.



- **3.** To customize the appearance of the widget, set the widget properties. For example, enter the text that you want to appear in this widget.
- **4.** To preview your changes to the dashboard, click .
- **5.** Save the dashboard.

SEE ALSO:

Widget Properties for Analytics Dashboards

## Add a Navigation Widget to Access Dashboard Pages

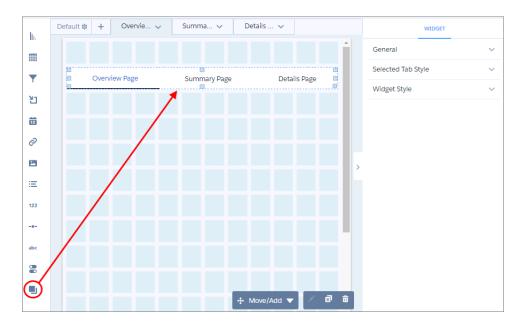
Add a navigation widget to an Analytics dashboard page to provide a way for dashboard viewers to access the other pages. Copy this widget to all pages in a dashboard.

For example, here's a navigation widget that provides access to each of the 5 defined pages.



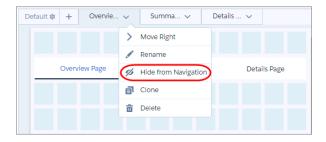
1. Drag the navigation widget to the dashboard canvas.

The widget shows all pages in the dashboard. The underlined page in the widget is the one that you're currently viewing.



2. To hide a page while viewing the dashboard, click vand then **Hide from Navigation**.

Dashboard viewers see only visible pages. The link to the hidden page remains hiddent from the navigation widget until you show it again.



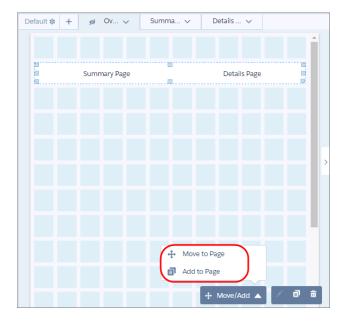
- **3.** From the same page menu, you can also move, rename, clone, and delete pages.

  The order of the page tabs determines the order of the page links in the navigation widget.
- **4.** Select the navigation widget to set the widget properties.

  For example, you can set the styling properties for all page links in the "General" section, except the selected page's link, which you set under the "Selected Tab Style" section. You might choose different styling for the selected page to indicate which page is selected while viewing the dashboard.



- **5.** To enable navigation from all pages, select the navigation widget that you just created on this page and use the **Add to Page** action to add it to other pages.
  - Using **Add to Page** ensures that all of the styling properties you set for the widget reflects across all pages. Otherwise, each widget has its own styling.



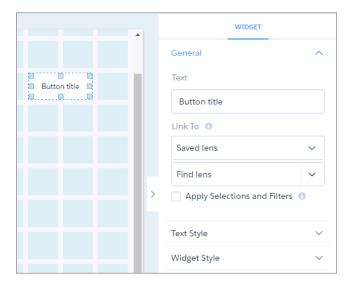
- **6.** To preview your changes to the dashboard, click <u>•</u> .
- 7. Save the dashboard.

## Add a Link Widget to Link to Other Assets

Instead of packing all possible key performance metrics, charts, and tables into a single dashboard, break up the content into multiple dashboards. Then use link widgets to tie the dashboards together. Dashboard viewers appreciate not having to figure out what to focus on in a busy dashboard. Also, use links to create analysis paths for users to follow or to link related assets, like dashboards, pages, steps, lenses, and even web pages.

- 1. Drag the link widget to the dashboard canvas.
- 2. To change the widget properties, select the widget.

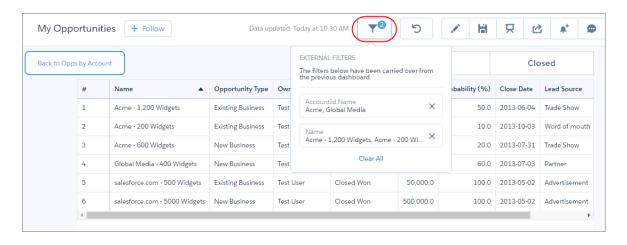
The Widget panel groups the widget properties into sections. So that you don't accidentally overlook any properties, expand any collapsed sections.



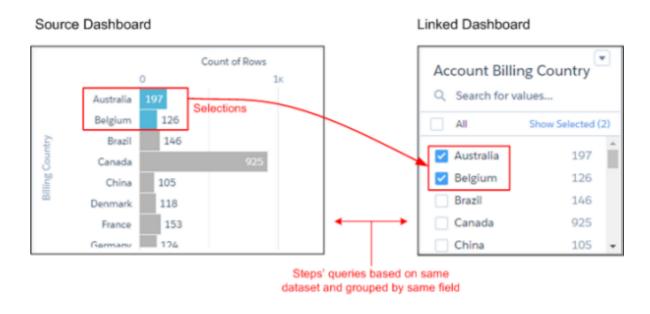
- 3. In the Text field, enter the label that appears on the link widget.
- **4.** In the Link To field, select whether you want to link to a step, lens, dashboard, page, or URL, and then select the asset. If you link to a dashboard that has multiple pages, the link opens the first page of the dashboard.
- 5. To pass global filters and selection-based filters (also called facets) to a linked Analytics asset, select **Apply Selections and Filters**. Analytics passes selections in chart, list, toggle, range, and date widgets as selections in the linked asset if they apply. For example, you select North America in a list widget based on the Region dataset field. Analytics applies that same selection to faceted steps in the linked dashboard that have a grouping based on the Region field in the same dataset.
  - Note: A selection is applied to a step in the linked dashboard only if the selected value exists in the initial result set for that step. If your selection isn't applied, try increasing the query limit for the step in the linked dashboard so that the value can be found.

Analytics passes global filters as filters to a linked asset as long as the filters apply. Analytics ignores a global filter if the linked asset doesn't use the dataset on which the global filter is defined. If the global filter is locked and the incoming filter is defined on the same field, Analytics ignores the incoming filter. If it's unlocked, the incoming filter overrides the global filter defined in the dashboard.

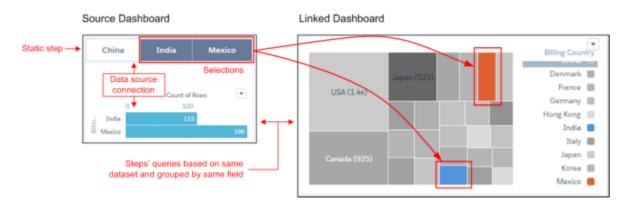
When you open a linked dashboard, the passed global filters appear as external filters. To view the external filters, click  $\Upsilon$  as highlighted in the screenshot. The External Filters panel shows filters passed from linked dashboards (and filters preconfigured in embedded dashboards). You can remove external filters while viewing the dashboard.



Note: To pass a filter selection to a linked asset, the asset must contain a query based on the same dataset and grouping used to define the filter.



To pass a filter selection based on a static step to a linked asset, the static step must be linked to the dataset using a data source connection. Also, the linked asset must contain a query based on the same dataset and grouping used to define the data source connection.



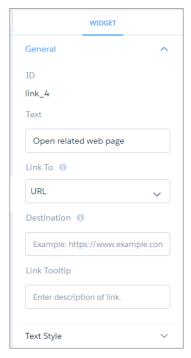
**6.** If the link is to a URL, enter the following properties.

#### Destination

Enter the full URL. The URL field supports http or https. It doesn't support passing Salesforce parameters in the URL, like Salesforce object or Analytics dataset fields.

### **Link Tooltip**

Enter a description of the link or the URL so users know where the link takes them.



- 7. To customize the appearance of the widget, set the widget properties.
- **8.** To preview your changes to the dashboard, click .
- **9.** Save the dashboard.

#### SEE ALSO:

Widget Properties for Analytics Dashboards

## Widget Properties for Analytics Dashboards

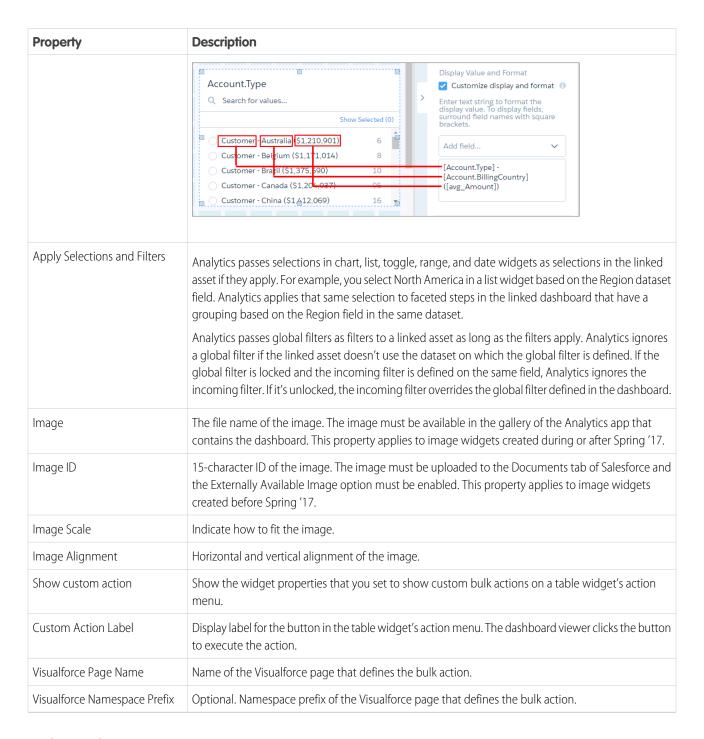
Widget properties define how widgets appear in the Analytics dashboard. For example, you can apply labels, backgrounds, and borders. To make widgets look consistent, you can set up default widget properties in the layout and then assign them to each widget. Widget properties vary based on the widget type and the designer used to create them. The properties listed here apply only to widgets created in the dashboard designer.

 $Analytics\ groups\ widget\ properties\ into\ sections.\ After\ the\ first\ section\ ("General"), the\ remaining\ sections\ are\ listed\ in\ alphabetical\ order.$ 

#### General

| Property            | Description   |
|---------------------|---|
| Chart Type          | Select the type of chart to visualize the data.   |
| Show as pivot table | Indicates whether the table is pivoted. A pivot table requires the underlying step to have at least one grouping. Analytics pivots the table on the last defined grouping. Disabled, by default.  |
| Show Explore Icon   | Allow dashboard viewers to click a link in the widget to open the underlying step in explorer.  Note: This option only applies to widgets based on steps in compact form. You can't explore widgets that are built on SAQL form steps or multiple datasets. |

| Property                     | Description   |
|------------------------------|---|
| Title                        | Title of the widget.  |
| Subtitle                     | Subtitle of the chart. Appears below the title in a smaller font.   |
| Title Alignment              | Horizontal alignment of the title.  |
| Title Color                  | Color of title.   |
| Title Size                   | Font size of title.   |
| Title Separator Color        | Color of the line that separates the widget title from the global filters.  |
| Filters Per Row              | Number of global filters to show per row in the global filter panel.  |
| Theme                        | Set a color scheme for the chart.   |
| Update instantly             | Instantly update the dashboard results based on a filter selection. Otherwise, you have to click <b>Update</b> to apply the filter.   |
| Measure Field                | The measure to show in the widget. You can use this field to specify the measure to show when multiple measures are defined in the underlying step. You can also use this option to not show the measure in the widget.   |
| Shorten number               | Display shortened numbers, rounded to the nearest tenths place. For example, when shortened, 1,111,556 appears as 1.1 M and 111,045 appears as 111.0 K.   |
| Text                         | Widget label.   |
| Link To                      | Link to a dashboard, lens, step, page, or URL. If the dashboard contains no pages, the option to link to a page doesn't appear.   |
| Page                         | Specify the page that you want the link widget to link to.  |
| Destination                  | The URL of the page that the link widget links to.  |
| Link Tooltip                 | Enter a tooltip that appears when the user hovers over the link. For example, if the link is to a website, enter the URL as the tooltip so the user knows where the link takes them.  |
| Customize display and format | Customize the display values for a list or toggle widget. The widget can display values from multiple fields. For example, a list widget can show sales rep and region, with values like SalesRepA-West, SalesRepB-West, and SalesRepC-North—allowing you to filter on both fields. You can also display measures as part of the value, and format the display. Click <b>Add field</b> dropdown, select a grouping or measure defined in the step query. You can insert more characters directly into the editor box to format the display. For instance, you can add parentheses to enclose the measure value as shown here. |



#### **Background Image**

| Property | Description   |
|----------|---|
| Image    | The file name of the image. The image must be available in the gallery of the Analytics app that contains the dashboard. This property applies to container widgets created during or after Spring '17. |

| Property        | Description   |
|-----------------|---|
| Image ID        | 15-character ID of the image. The image must be uploaded to the Documents tab of Salesforce with the Externally Available Image option enabled. This property applies to container widgets created before Spring '17. |
| Image Scale     | Indicate how to fit the image.  |
| Image Alignment | Horizontal and vertical alignment of the image.   |

## **Band Colors**

| Property    | Description                          |
|-------------|--------------------------------------|
| Low Band    | The color range for the low band.    |
| Medium Band | The color range for the medium band. |
| High Band   | The color range for the high band.   |

## BreakPoints

| Property | Description                                      |
|----------|--|
| Min      | Minimum value of the low color band.             |
| Medium   | The value separating the low and medium colors.  |
| High     | The value separating the medium and high colors. |
| Max      | Maximum value of the high color band.            |

## Center Axis, Left Axis, X-Axis, Y-Axis

| Property           | Description  |
|--------------------|--|
| Start axis at zero | Start the axis at 0.   |
| Show axis          | Show the axis.   |
| Show title         | Show the title of the axis.  |
| Title              | Enter title of the axis. The default title is the name of the dimension for x-axis or names of the measures for y-axis. Multiple measures appear as a comma-separated list.    |
| Reference Line     | Show a reference line, which you can use to show a threshold, boundary, or reference point in the chart. For x-axis, it's a vertical line. For y-axis, it's a horizontal line. |

## **Chart Details**

| Property      | Description   |
|---------------|---|
| Compute total | Computes the total based on all segments of the waterfall or stacked waterfall chart. |

| Property                  | Description  |
|---------------------------|--|
| Show values in chart bars | Show the measure value of each bar in the chart.   |
| Normalize values          | Show stacked groups as a percentage of the total.  |
| Axis Mode                 | Specify how multiple measures appear in the chart. You can select one of the following values:   |
|                           | Single Axis Show all measures on the same axis.  |
|                           | <b>Dual Axis</b> Show the first measure on its own axis and the remaining measures on a separate axis.   |
|                           | Small Multiples Show each measure in a separate graph.   |
| Auto fit                  | Fit entire chart inside the widget. Else, if needed, scroll to see the remainder of the chart.   |
|                           | You can select one of the following values:  |
|                           | <b>None</b> No scaling is applied. Scroll bars appear for charts larger than the widget.   |
|                           | Fit  |
|                           | Scale the chart to exactly fit the widget.   |
|                           | Preserve labels  Scale the chart to fit the widget while preventing labels from overlapping. Scroll bars appear for charts larger than the widget. |
| Handling Missing Values   | Specify whether to connect data points regardless of missing data.   |
|                           | You can select one of the following values:  |
|                           | <b>connect</b> Show a continuous graph, ignoring missing values.   |
|                           | disconnect Show gaps in the graph where values are missing.  |
| Fill area                 | Fill area under the timeline chart.  |
| Show points               | Show data points on the line.  |
| # of stem segments        | The number of values that appear in the funnel's stem.   |
| lcon                      | Icon used in the ratings chart.  |
| Number of icons           | Number of icons that appear for each rating.   |
| Show value as             | Specify how to show values.  |
|                           | You can select one of the following choices:   |
|                           | None Do not show values.   |

| Property             | Description  |
|----------------------|--|
|                      | Number Show as numbers.  |
|                      | Compact Number Show compact form of numbers, summarized using letter suffixes.   |
|                      | Percentage Show as percentages of the total.   |
| Show max value       | Show the maximum measure value in each rating.   |
| Show values on left  | Show the measure value on the left of each rating. Default is on the right.  |
| Show measure title   | Show the title of the measure in the chart.  |
| Show measure axes    | Show the axes for measures in the chart.   |
| Show total in title  | Show the total in the measure title.   |
| Show total in center | Show the total of the measure in the center of the donut chart.  |
| Center Size          | The percentage of the donut chart or polar gauge used to create the center circle.   |
| Map Type             | Select the type of map.  |
| Colors               | Depending on the chart type, specifies the colors of the low and high values, or colors for the start, total, positive, and negative values. |

## Date

| Property                      | Description  |
|-------------------------------|--|
| Default Date Mode             | Specify whether the date widget displays absolute or relative dates, by default.                           |
| Allow date mode switching     | Indicates whether the dashboard viewer can switch between absolute and relative dates in the date widget.  |
| Default Calendar Type         | Specifies whether the date widget displays dates using the calendar or fiscal year, by default.            |
| Allow calendar type switching | Indicates whether the dashboard viewer can switch between the fiscal and calendar year in the date widget. |

## Filter Style

| Property         | Description                     |
|------------------|---------------------------------|
| Field Color      | Color of the field name.        |
| Value Color      | Color of the field value.       |
| Background Color | Color of the filter background. |
| Border Color     | Color of the filter border.     |

| Property      | Description              |
|---------------|--------------------------|
| Border Radius | Radius of filter border. |

## Legend

| Property                      | Description   |
|-------------------------------|---|
| Show legend                   | Show the chart legend.  |
| Show legend header            | Show legend header.   |
| Show legend inside chart area | Show legend inside the chart area to reduce space required for the legend. The legend might overlap with the chart. |
| Position                      | Location of legend inside the chart widget.   |

## Table Options

| Property     | Description  |  |   |              |                 |                 |                     |                |                       |              |  |
|--------------|--|--|---|--------------|-----------------|-----------------|---------------------|----------------|-----------------------|--------------|--|
| Column Size  | You c  | You can set the table column size to:  |   |              |                 |                 |                     |                |                       |              |  |
|              | D  | Fit to Data  Dynamically set the column widths based on the length of the data. You can also set a minimum and maximum width to ensure that the column isn't too wide or narrow. |   |              |                 |                 |                     |                |                       |              |  |
|              |  | <b>Fixed Width</b> Set each column to the same width.  |   |              |                 |                 |                     |                |                       |              |  |
|              | Fi   | Fit to Widget  Fit the columns to the size of the widget. Use this setting to ensure that no empty space appea at the right side of the table, as shown here.                    |   |              |                 |                 |                     |                |                       | eai          |  |
|              |  |  | PADUSTRY                                  | ACCOUNT TYPE | BILLING COUNTRY | BILLING CITY    | ACCOUNT SOURCE      | ANNUAL REVENUE |                       |              |  |
|              |  | 1  | Banking                                   | Customer     | France          |                 | Employee Referral   | 9,337,343,000  |                       |              |  |
|              |  | 2  | Healthcare                                | Partner      | Brazil          |                 | Partner             | 6,009,291,000  |                       |              |  |
|              |  | 3  | Technology                                | Customer     | Turkey          | -               | Web                 | 4,737,854,000  | $\longleftrightarrow$ |              |  |
|              |  | 4  | Engineering                               | Customer     | Korea           |                 | Partner             | 2,774,262,000  |                       |              |  |
|              |  | 5  | Biotechnology                             | Customer     | United Kingdom  | -               | Employee Referral   | 802,499,000    |                       |              |  |
| Column Width | widge  | et ali   | of each colu<br>gnment in a<br>num column | dashboard    | d. If you sel   | ected <b>Fi</b> | <b>t to Data</b> in | Column Size    | e, specif             | fy the minim |  |
| Show Totals  | Shows the totals for all measures across the top of a compare or values table.  Note: The Show Totals option appears in the widget properties only if the Show Totals option is set in the step. |  |   |              |                 |                 |                     |                |                       |              |  |

## Text Style

| Property           | Description                       |
|--------------------|-----------------------------------|
| Text Color   Color | Color of the text.                |
| Text Size   Size   | Size of the text.                 |
| Number Color       | Color of the number.              |
| Number Size        | Size of the number.               |
| Title Color        | Color of the title.               |
| Title Size         | Size of the title.                |
| Alignment          | Horizontal alignment of the text. |

## Trellis

| Property                  | Description  |
|---------------------------|--|
| Show as trellis           | Create separate graphs based on groupings.   |
| Туре                      | Select the type of trellis, which affects how the graphs appear. You can select one of the following values:                     |
|                           | <b>Horizontal</b> Separate horizontally, with a graph for each value in the first grouping.                                      |
|                           | <b>Vertical</b> Separate vertically, with a graph for each value in the first grouping.  |
|                           | <b>Matrix</b> Display graphs in a table, with the first grouping in columns and the second grouping in rows.                     |
|                           | <b>Wrap</b> Display graphs line-by-line for each value in the first grouping, wrapping at the value set in the per-line setting. |
| Number of charts per line | Number of charts per line when the trellis wraps to multiple lines.  |

# Widget Style

| Property         | Description  |
|------------------|--|
| Use defaults     | Use the default widget properties defined in the dashboard properties. |
| Background Color | Background color of the widget.  |
| Border           | Border around the widget.  |
| Border color     | Color of the widget border.  |
| Border Width     | Width of the widget border (in pixels).                                |

| Property      | Description                                    |
|---------------|--|
| Border Radius | Roundness of the corners of the widget border. |

## Manage Steps for Widgets

Steps return results that are displayed in widgets. For example, a number widget displays the result of a calculation—that calculation is defined in a step. Steps can query a data source, like a dataset or a Salesforce object. They can also be a static list of user-defined values—a static step. In addition to clipping a lens from an exploration, you can use the following ways to create steps in the dashboard designer: use the widget wizard or create it manually.

#### Watch a Demo: • Use Steps to Build Wave Dashboard Widgets (English Only)

The widget wizard creates a basic step that meets the minimum requirements for the widget. If you need a more robust step, like one that has a customized SAQL query, manually create your own. The method you choose depends on how much flexibility you need.

Because step IDs, like "Amount\_1," are not always descriptive, add a step label. For example, to clarify the "Amount\_1" step, you can add the label "Won Opportunity Amount." Specify the label while you create the step because Analytics generates the step ID based on the label. After creating the step, you can't change the ID, unless you edit the JSON.

To improve dashboard performance, minimize the number of steps in a dashboard. When possible, reuse a step for multiple widgets. You can reuse any step, except a range or date widget's step.

#### IN THIS SECTION:

#### Query and Static Steps

Widgets that display data require steps. A widget displays the results returned by a step. For example, a step calculates the average opportunity amount, grouped by region. The widget displays the results in a bar chart format with each bar showing the average amount for a region. In the dashboard designer, most widgets have a wizard that you can use to build the widget and its step. You can also build your own step and attach it to a widget.

#### Create a Step with the Explorer

Instead of using a widget wizard to create the step, you can build your step from scratch.

#### Create a Step with the SAQL Editor

Use the SAQL editor to customize the query of a step. SAQL query steps are more robust than steps created by widget wizards and in the Chart and Table modes of the explorer. For example, you can write a SAQL query that retrieves results from multiple datasets.

#### Create a Static Step with Custom Values

Use static steps to apply user-defined values to filters, groups, measures, sort order, and limits of other step queries. For example, you can create a toggle widget that filters case records based on the following user-defined values: High Priority Cases, Medium Priority Cases, and Low Priority Cases. To enable these custom values to filter your data, you map them to your data using a binding.

#### Find a Step

You can find all steps defined in the dashboard in the steps panel. The panel organizes steps into categories and provides a search bar to help you locate your steps faster.

#### Edit a Step

When you edit a step, you can change the step details, like the query and step label. These changes affect all widgets that use the step. You can also change the visualization properties, like chart type. Depending on the method that you use to edit the step, Analytics handles visualization changes differently.

#### Clone a Step

Clone a step to quickly create a step based on an existing one. Cloning is useful when you can reuse an existing step with just a few tweaks.

#### Modify the Step Results Based on the Dashboard Viewer

You can modify a step query based on the user viewing the dashboard. For example, you can filter opportunity records to show only those opportunities owned by this user.

#### Optimize a Step

Steps can slow down your dashboard. Run a performance check on the steps to ensure that they're running optimally. Analytics identifies query bottlenecks and provides recommendations to improve step performance.

#### **Troubleshoot Unexpected Step Results**

If you have questions a step's results, review the query details to learn how Analytics determines the results. Compare the original query defined in the step to the final query executed by Analytics. If the step is faceted or the dashboard contains global filters, Analytics applies extra filters to query. If the query contains a binding, use the bindings tracer to verify the binding results.

#### Step Properties for Analytics Dashboards

Step properties define the query that returns results to display in the widget. These properties also specify how the widget behaves and interacts with other widgets in the Analytics dashboard. The properties apply to dashboards created in the dashboard designer only.

#### SEE ALSO:

Make the Dashboard Widgets Interactive

### **Query and Static Steps**

Widgets that display data require steps. A widget displays the results returned by a step. For example, a step calculates the average opportunity amount, grouped by region. The widget displays the results in a bar chart format with each bar showing the average amount for a region. In the dashboard designer, most widgets have a wizard that you can use to build the widget and its step. You can also build your own step and attach it to a widget.

In the dashboard designer, a "lens" and a "step" are similar, but not the same. They both contain queries used to calculate results. However, unlike a step, a lens can be saved as a standalone asset in an app. For example, you can save a lens that displays opportunity trends as a timeline chart.

You can build a widget using one of the following types of steps.

#### **Query Step**

Most steps are query steps. A query step contains a query against a data source. The type of query is based on the data source. For instance, Analytics can execute a SAQL query against one or more datasets or a soql query against a Salesforce object. Analytics provides multiple ways to create query steps.

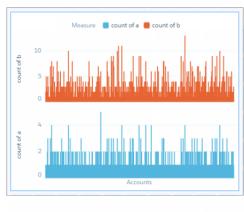
You can use the Chart mode or Table mode of the explorer to query a single dataset. You can calculate measures, group results by dates and dimensions, and filter records based on dataset fields. Here's an example of an explorer-built step that populates a chart widget.



To create more robust SAQL query steps, use the SAQL mode of the explorer. For example, you can create a SAQL query based on multiple datasets, which isn't possible using in Table and Chart modes. The following chart widget shows the results from the step's SAQL query. For more information about SAQL queries, see the Analytics SAQL Reference.

Step (in SAQL Editor)



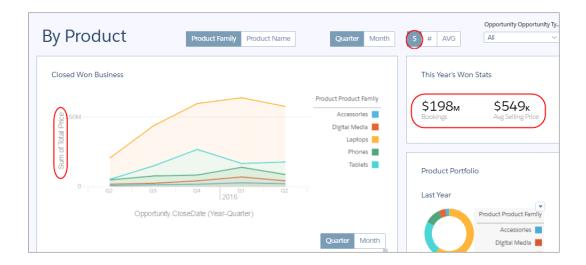


Analytics creates different step types based on the widget type. Some step types have a limit on the number of results that they can return. For more information about all step types, including those not available in the explorer, see the Analytics Dashboard JSON Reference.

#### **Static Step**

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A static step is more rare. It doesn't query data. Instead, the step provides a static list of user-defined values. For example, a toggle widget can show static values "\$," "#" and "AVG." To make the toggle widget interact with other widgets in the dashboard, use data source linking to connect the static step with other faceted steps. Or bind the static values to the steps of other widgets in your dashboard. For instance, you can bind "\$" and "#" to show different measures: "\$" to show the value of opportunities, and "#" to show the number of opportunities. In this example, "\$" is selected in the toggle widget, and the dashboard shows the value of opportunities.



For more information, see Create a Static Step with Custom Values.

#### SEE ALSO:

Manage Steps for Widgets

Create a Step with the Explorer

Create a Step with the SAQL Editor

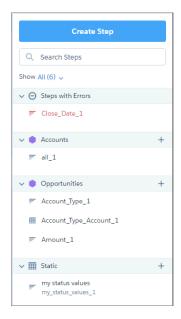
Create a Static Step with Custom Values

## Create a Step with the Explorer

Instead of using a widget wizard to create the step, you can build your step from scratch.

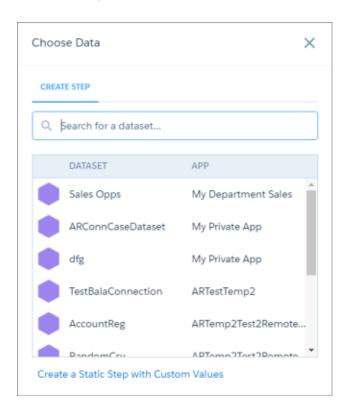
One way to create a step with explorer is to clip an exploration to a dashboard. (For information about this method, see Clip a Lens to a Dashboard.) You can also create the step from the dashboard designer, which is covered here.

**1.** To open the steps panel, click an empty space in the dashboard canvas in the dashboard designer.



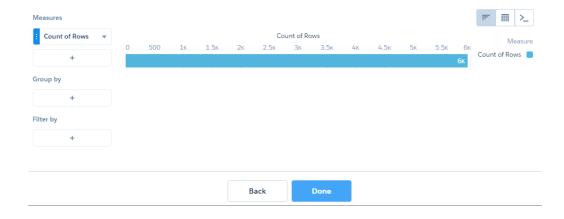
Tip: Click + next to a section in the steps panel to add a step of that type. This feature is available for all steps, except apex, soq1, and multiple-dataset steps.

#### 2. Click Create Step.



**3.** Select the dataset that contains the data that you want to include in the step. Enter the name of the dataset in the search box if your dataset isn't easy to find.

The explorer appears, showing the Count of Rows measure, by default.

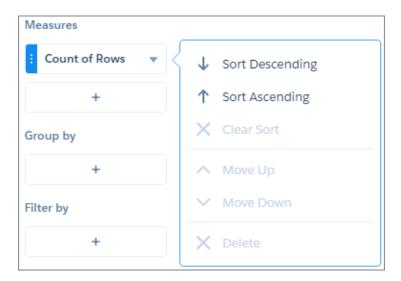


**4.** In the explorer, click **Untitled Step** and enter the step label.

Analytics creates the step ID from the label. After you create the step, you can't change the step ID. Analytics refers to steps by their ID so dashboards don't break if you change the labels.

**5.** To add a measure, click + under Measures.

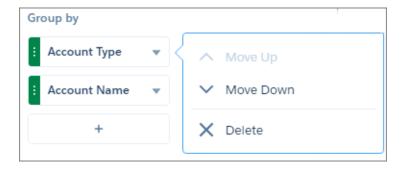
To change a measure, select the measure and then choose a new one. To sort, reorder, or delete a measure, click the down arrow to the right of the measure and select the option.



You can add as many measures as needed.

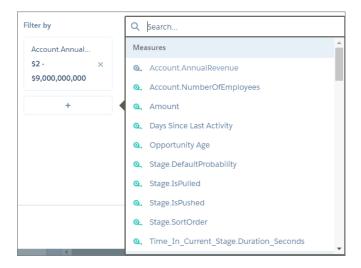
**6.** To group the measures by a date or dimension, click + under Group by, and then select the field.

You can add multiple groupings. To change a grouping, click the grouping and select a new field. To reorder or delete a grouping, click the down arrow to the right of the grouping and then select the option.

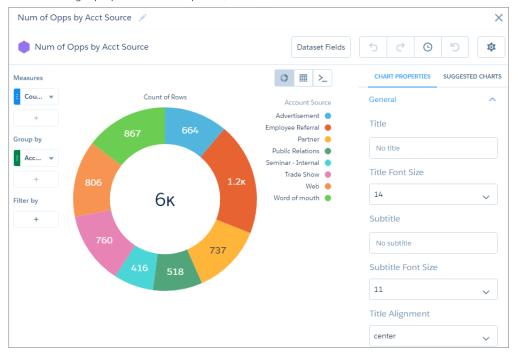


**7.** To add a filter, click **+** under Filter by, and then select the field to filter by.

You can add multiple filters. To delete the filter, click  $\times$  .



- **8.** To change the chart or table type for the step, click  $\equiv$  or  $\equiv$  , respectively.
- **9.** To set the widget properties at the step-level, click **2.**



Note: If you drag this step to the dashboard designer canvas, Analytics displays the step results as the chart specified while creating the step. To display the widget differently in the dashboard than what was specified at the step level, edit the dashboard and set the widget properties there. The widget properties override the step settings.

For more information about chart widgets, see Add Chart Widgets to Visualize Data . For more information about table widgets, see Add a Table Widget to Show Record Details and Create Calculated Columns .

- **10.** To write a custom SAQL query, click For more information, see Create a Step with the SAQL Editor .
- 11. Click Done.

Analytics adds the step to the steps panel, making it available for use by other widgets in the dashboard.

**12.** Save the dashboard.

SEE ALSO:

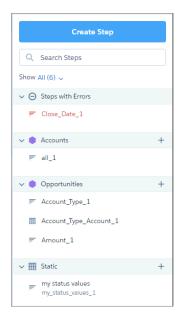
Step Properties for Analytics Dashboards

### Create a Step with the SAQL Editor

Use the SAQL editor to customize the query of a step. SAQL query steps are more robust than steps created by widget wizards and in the Chart and Table modes of the explorer. For example, you can write a SAQL query that retrieves results from multiple datasets.

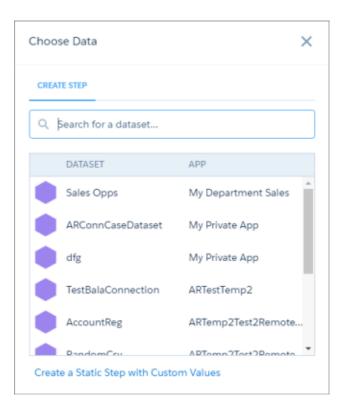
Note: If you modify the SAQL query using the SAQL editor, you can no longer add dimensions, measures, and filters if you switch back to the table or chart view. However, you can still change the visualization parameters.

1. To open the steps panel, click an empty space in the dashboard canvas in the dashboard designer.



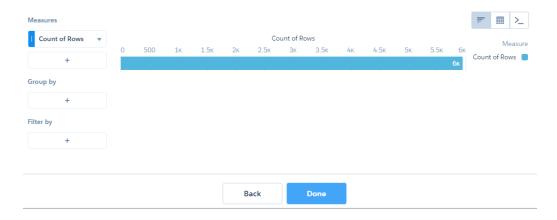
Tip: Click + next to a section in the steps panel to add a step of that type. This feature is available for all steps, except apex, soql, and multiple-dataset steps.

#### 2. Click Create Step.



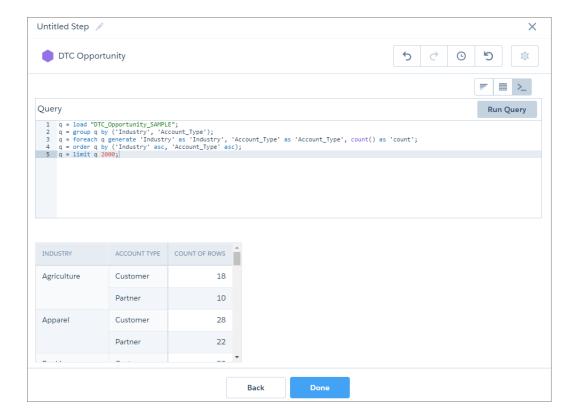
3. Select the dataset that contains the data that you want to include in the step. Enter the name of the dataset in the search box if your dataset isn't easy to find.

The explorer appears, showing the Count of Rows measure, by default.



- **4.** In the explorer, click **Untitled Step** and enter the step label.

  Analytics creates the step ID from the label. After you create the step, you can't change the step ID. Analytics refers to steps by their ID so dashboards don't break if you change the labels.
- **5.** To write a custom SAQL query, click ... The SAQL editor appears, showing the current SAQL query.



**6.** Edit the SAQL query, as needed.

The SAQL editor provides contextually smart, auto-completion suggestions. For more information about SAQL queries, see the *Analytics SAQL Reference*.

**7.** Click **Run Query** to validate the query.

The **Done** button enables if the query is valid.

8. Click Done.

Analytics adds the step to the steps panel, making it available for use by other widgets in the dashboard.

9. Save the dashboard.

#### IN THIS SECTION:

#### Tips for Working with Steps Created from the SAQL Editor

Steps created from the SAQL editor have unique characteristics compared other steps, like those steps created from the explorer. Review the following tips for working with steps created from the SAQL editor.

#### SEE ALSO:

Step Properties for Analytics Dashboards

### Tips for Working with Steps Created from the SAQL Editor

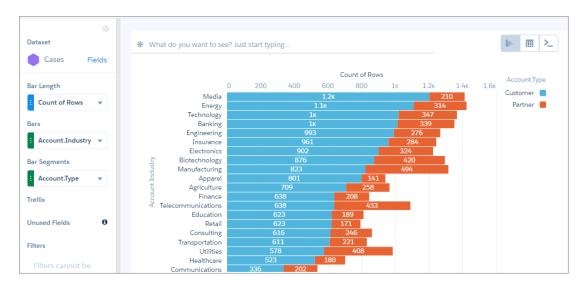
Steps created from the SAQL editor have unique characteristics compared other steps, like those steps created from the explorer. Review the following tips for working with steps created from the SAQL editor.

#### Sorting in a Stacked Bar or Stacked Column Chart

Sorting works differently in stacked bar and stacked column charts depending on whether the underlying step is created in the explorer or SAQL editor. To see the difference, let's start by creating a stacked bar chart in the explorer. The chart shows the number of cases, grouped by industry and account type. The chart is sorted in descending order. Notice how the total bar size shortens. (For advanced users who modify the dashboard JSON, charts created in the explorer have step type aggregateflex.)



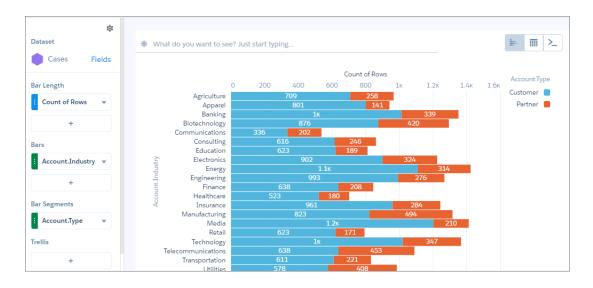
If you customize the query in the SAQL editor, the results sort differently—even if you don't change the sort order. The same bars appear, but in a different order. (For advanced users, the step type changes from aggregateflex to saql in the dashboard JSON when you edit the query in the SAQL editor.)



Although it looks like the results aren't sorted, they are. The results are sorted in descending order based on the first account-type segment for each industry. Notice how the blue segments get shorter as you scan down the chart.

If you're wondering how to sort the results based on total bar size, like we saw when we first created the chart in the explorer, perform the following tasks.

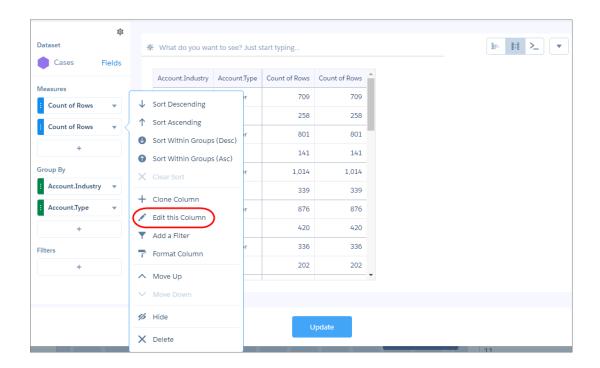
1. In the explorer, create the chart by adding the measure and groupings (one for Bars and another for Bar Segments).



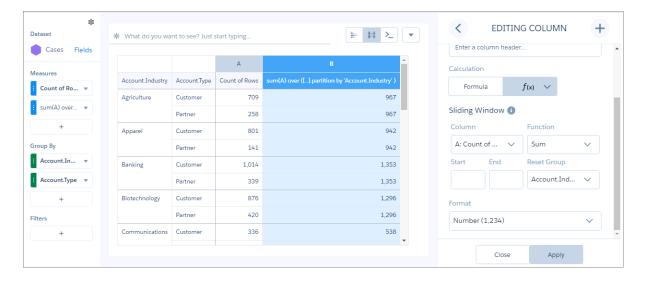
2. Click and select to switch to a compare table.



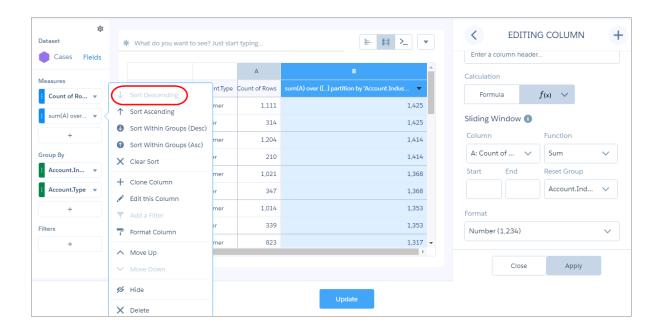
- **3.** Add another Count of Rows measure by clicking + under Measures, and then clicking **Count** > **Rows**. You're going to total the values for all account types for each industry, and then sort based on that total using the windowing function.
- **4.** For the second Count of Rows measure, click the down arrow and select **Edit this Column**.



5. Select **Sliding Window** under Calculation, select **Sum** as the function, remove the start and end values for the window, select the **Account.Industry** as the reset group, and then click **Apply**. This calculation combines the counts for both account types for each industry.



**6.** To sort the results based on this new total, select the dropdown arrow for this measure and select **Sort Descending**.



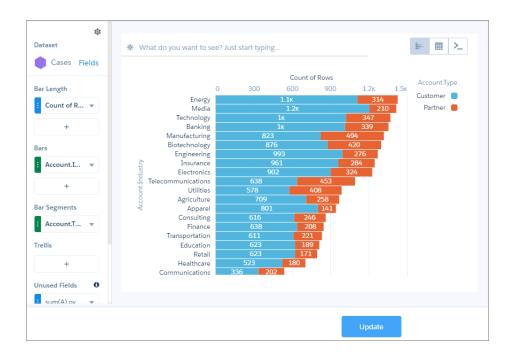
7. To view the results as a stacked bar or column chart, select unand select the chart.



When you view the query for the chart in the SAQL editor, you see the following SAQL query.

```
q = load "case95";
result = group q by ('Account.Industry', 'Account.Type');
result = foreach result generate q.'Account.Industry' as 'Account.Industry',
q.'Account.Type' as 'Account.Type', count(q) as 'A';
result = group result by ('Account.Industry', 'Account.Type');
result = foreach result generate 'Account.Industry', 'Account.Type', sum(A) as 'A',
sum(sum(A)) over ([..] partition by 'Account.Industry') as 'B';
result = order result by ('B' desc);
result = limit result 2000;
```

8. To hide the second measure that we created for sorting purposes, click the dropdown arrow for that measure, and then select Hide.



The hidden measure appears under Unused Fields in the left pane.

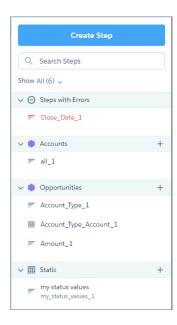
**9.** To apply the changes, click **Update**.

# Create a Static Step with Custom Values

Use static steps to apply user-defined values to filters, groups, measures, sort order, and limits of other step queries. For example, you can create a toggle widget that filters case records based on the following user-defined values: High Priority Cases, Medium Priority Cases, and Low Priority Cases. To enable these custom values to filter your data, you map them to your data using a binding.

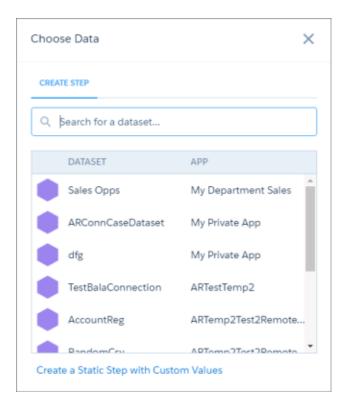


1. To open the steps panel, click an empty space in the dashboard canvas in the dashboard designer.

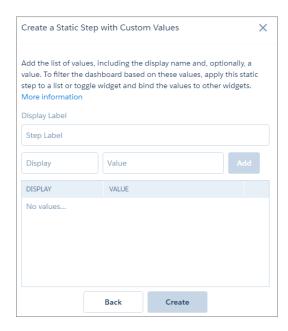


Tip: Click + next to a section in the steps panel to add a step of that type. This feature is available for all steps, except apex, soq1, and multiple-dataset steps.

### 2. Click Create Step.



3. Click Create a Static Step with Custom Values.



- **4.** In Display Label, enter the step label.

  Analytics creates the step ID from the label. After you create the step, you can't change the step ID. Analytics refers to steps by their ID so dashboards don't break if you change the labels.
- 5. Add the list of values, including the display name and value for each.
  - Note: The display name appears in the associated widget. Values are optional, but if included, you can bind them to other steps. For example, you can create a binding that filters other steps based on the selected custom value.

#### 6. Click Create.

Analytics adds the step to the steps panel, making it available for use by other widgets in the dashboard.

- **7.** To apply this static step to a list or toggle widget:
  - **a.** Drag the list or toggle widget from the widget toolbar to the dashboard canvas.
  - **b.** Drag the static step on top of the widget. The widget shows the custom display values as selection options.
  - **c.** To change the widget and step properties, select the widget.

The Widget panel groups the widget properties into sections. So that you don't accidentally overlook any properties, expand any collapsed sections.

- **d.** To customize the appearance of the widget, set the widget properties.
- **e.** To preview your changes to the dashboard, click ...
- **f.** Save the dashboard.

If you applied the static step to a list or toggle widget, you can see the widget in the dashboard. But it's not tied to any other widgets. To specify how a selection in this step affects other widgets, bind the custom values of the static step to the steps of the other widgets.

For example, create a binding that filters the other widgets based on the selected static value in the list or toggle widget. For more information about binding static steps, see the *Analytics Bindings Developer Guide*.

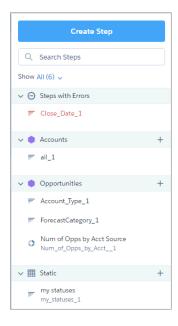
#### SEE ALSO:

Step Properties for Analytics Dashboards Widget Properties for Analytics Dashboards Step Properties for Analytics Dashboards

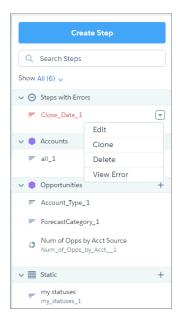
# Find a Step

You can find all steps defined in the dashboard in the steps panel. The panel organizes steps into categories and provides a search bar to help you locate your steps faster.

The steps panel categorizes steps by dataset name and step type. It also contains a special category for erroneous steps. Categories and steps are listed in alphabetical order. You can collapse each category.



Hover over the step and click the down arrow to view actions that you can perform on the step. For instance, in the Steps with Errors section, click **View Error** to understand what's wrong with the step.



# Edit a Step

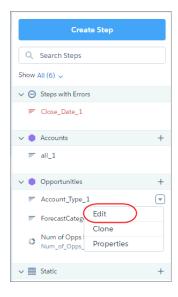
When you edit a step, you can change the step details, like the query and step label. These changes affect all widgets that use the step. You can also change the visualization properties, like chart type. Depending on the method that you use to edit the step, Analytics handles visualization changes differently.

You can use the following methods to change a step.

| Method                            | Handling Visualization Changes   |
|-----------------------------------|--|
| Edit the step from the step panel | Analytics saves the visualization changes in the step, but doesn't apply them to existing widgets that use the step.                                   |
| Double-click the widget           | Analytics saves the visualization changes in the step and applies them to the widget. Analytics doesn't apply them to other widgets that use the step. |

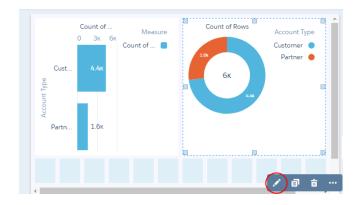
Consider the following limitations before editing a step.

- You can edit only steps with step types aggregate, aggregateflex, saql, and grain. If you edit an aggregate or aggregateflex step type that contains a SAQL query in the pigql JSON attribute, Analytics converts the step type to saql. To learn about the implications of converting between these step types, see Considerations When Converting Step Types.
- You can't edit a step that contains a binding or that's used in a global filter widget created before Winter '18.
- 1. Open the dashboard in edit mode.
- **2.** Use one of the following methods to edit the step.
  - a. To edit the step from the steps panel, hover over the step, click the down arrow, and then click **Edit** in the step actions menu.



**a.** Double-click the widget in the dashboard.

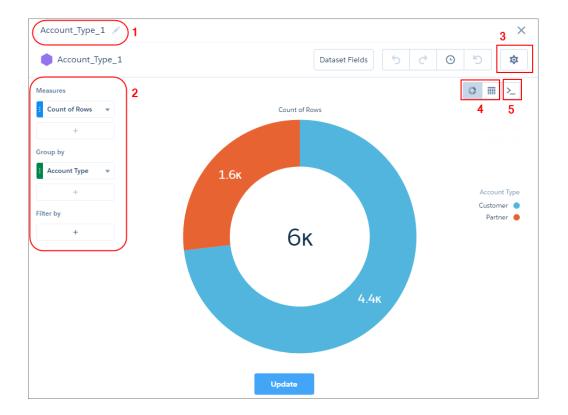
You can also select the widget and click / in the widget actions menu.



3. Make your changes.

You can change the following details:

- Step label (1)
- Step query (2)
- Visualization properties (3)
- Chart type and table type (4)
- SAQL query (5)



- Note: For information about **Dataset Fields**, go View and Configure Dataset Fields.
- 4. Click Update.
- **5.** To save your changes, save the dashboard.

### IN THIS SECTION:

### Considerations When Converting Step Types

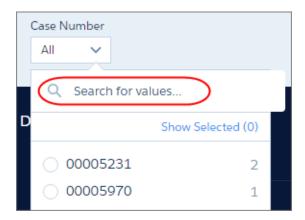
Analytics treats step types differently. Before you convert an aggregate or aggregateflex step type to saql, review the following implications.

# **Considerations When Converting Step Types**

Analytics treats step types differently. Before you convert an aggregate or aggregateflex step type to saql, review the following implications.

Unlike the aggregateflex step type, the saql step type provides limited support when the actual number of query results exceeds the limit that a query can return.

• When performing a search in a list widget, a saql step type doesn't find values that aren't returned in the first batch of query results.

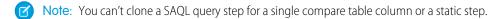


• Analytics doesn't apply initial selections for a saq1 step type if the selected value isn't returned in the first batch of query results. For example, you set an initial selection on the Account Name field. When you open the dashboard, assume the corresponding widget shows only 2,000 of 100,000 accounts. If the initial selection isn't one of the 2,000 returned accounts, Analytics doesn't apply the initial selection to the dashboard.

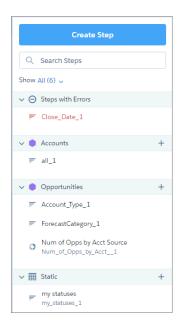
For more information about how to use the limit JSON parameter to configure the maximum number of results that each step type can return, see steps Properties for Dashboard Designer Dashboards.

# Clone a Step

Clone a step to quickly create a step based on an existing one. Cloning is useful when you can reuse an existing step with just a few tweaks.

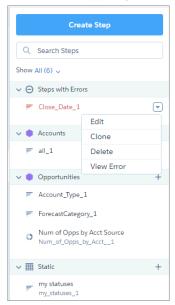


1. To open the steps panel, click an empty space in the dashboard canvas in the dashboard designer.



Note: You can't apply grayed-out steps to widgets. But you can clone them and view their properties.

- **2.** To show all steps, select **All** in the Show field.
- **3.** Hover over the step that you want to clone, and then click the down arrow.



#### 4. Select Clone.

The step opens in the explorer, where you can easily modify it. If the step was created using SAQL, the clone opens in the SAQL editor instead.

5. Edit the step label.

The default label has "Clone of " prepended to the original step label

- **6.** Make your changes to the clone.
- 7. Click Done.

Analytics adds the step to the steps panel, making it available for use by other widgets in the dashboard.

- 8. Save the dashboard.
- Note: When you clone a step and edit its SAQL query, the resulting JSON doesn't always reflect the functions applied to measures. After you run and save the SAQL, the function is changed to count. For example, if the original step contained this measures array:

```
"query": {
     "measures": [
        ["max","DailyActiveUsers"]
     ]
}
```

and the SAQL was edited, run, and saved, the updated JSON contains this measures array instead:

```
"query": {
     "measures": [
          ["count","*","max_DailyActiveUsers"]
          ]
     }
```

This discrepancy has no effect on the data viewed in the dashboard.

# Modify the Step Results Based on the Dashboard Viewer

You can modify a step query based on the user viewing the dashboard. For example, you can filter opportunity records to show only those opportunities owned by this user.

You can specify user tokens in any query parameter in saql, soql, and aggregateflex step types. The syntax to specify a token is: !{user.<User object field name>}. Valid tokens are: user.Id, user.name, user.roleid, and user.rolename.



Tip: Because names aren't always unique, consider using IDs when specifying a user token.

This saql-type step adds the user. Id token as a query filter so that opportunity owners viewing the dashboard see only their opportunities.

```
"My_Opportunities_1": {
    "type": "saql",
    "label": "My Opportunities",
    "query": "q = load \"opportunity\"; \nq = filter q by 'OwnerId' == \"!{user.Id}\"; \nq
= group q by 'Account.Type';\nq = foreach q generate 'Account.Type' as 'Account.Type',
count() as 'count';\nq = order q by 'count' desc;\nq = limit q 1000;",
    "datasets": [
        {
            "id": "0FbB00000017QxKAI",
            "name": "opportunity",
            "label": "Opportunities",
            "url": "/services/data/v41.0/wave/datasets/0FbB0000000170xKAI"
        }
    ],
    "useGlobal": true,
    "isGlobal": false,
    "broadcastFacet": true,
    "receiveFacet": true,
    "selectMode": "single",
    "numbers": [],
    "groups": [],
    "strings": [],
    "visualizationParameters": {
    },
},
```

SEE ALSO:

Set Initial Selections in the Dashboard

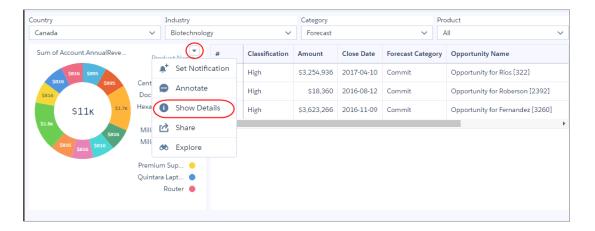
# Optimize a Step

Steps can slow down your dashboard. Run a performance check on the steps to ensure that they're running optimally. Analytics identifies query bottlenecks and provides recommendations to improve step performance.

1. Open the dashboard in view mode.

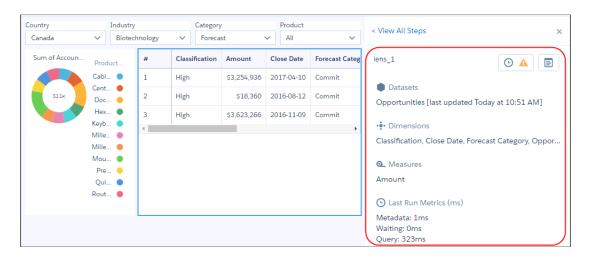
Because Analytics analyzes step performance for the current layout only, ensure that you're viewing the dashboard in the right layout. Performance can differ from one layout to another because layouts can have different widgets and interactions. If the dashboard contains multiple pages, Analytics provides performance analysis for the current page.

2. Click the drop-down arrow for the widget that uses the step that you want to analyze.



- 3. Select **Show Details** for the widget.
  - 1 Tip: To see the Show Details option for a list widget, enable the "Show explorer icon" widget property. The Show Details option doesn't show for link, image, container, global filter panel, and text widget types because they don't have steps.

The step details summarize different parts of the query, like measures, filters, groupings, and the dataset on which its built.



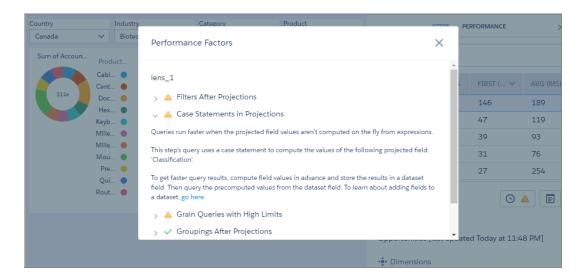
The Last Run Metrics section identifies other factors that contribute to the total time required to populate the results of a step.

| Last Run Metric | Description   |
|-----------------|---|
| Metadata        | Number of milliseconds needed to retrieve the metadata for the datasets involved in the query. The metadata fetch only occurs the first time the step runs. |
| Waiting         | Number of milliseconds needed to resolve bindings to construct the query.   |
| Query           | Number of milliseconds to run the step. Note that a step run might execute the query or use cached results.   |

If Analytics identifies a performance issue with the step, it shows a warning icon ( ( ) next to the View Performance Details button ( ), as the previous screenshot shows.

**4.** To view the performance issues and suggestions for resolving them, click **O**.

The Performance Factors section shows all factors by which the step is evaluated. Ignore the factors with a green checkmark ( ) because these issues don't apply to the step.

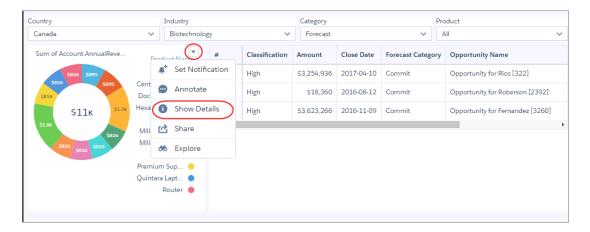


**5.** Expand each factor with a warning icon to learn how to improve the step's performance.

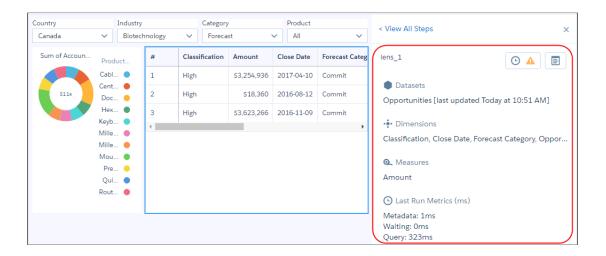
# Troubleshoot Unexpected Step Results

If you have questions a step's results, review the query details to learn how Analytics determines the results. Compare the original query defined in the step to the final query executed by Analytics. If the step is faceted or the dashboard contains global filters, Analytics applies extra filters to query. If the query contains a binding, use the bindings tracer to verify the binding results.

- 1. Open the dashboard in view mode.
- 2. Click the drop-down arrow for the widget that uses the step that you want to analyze.



- 3. Select Show Details for the widget.
  - Tip: To see the Show Details option for a list widget, enable the "Show explorer icon" widget property. The Show Details option doesn't show for link, image, container, global filter panel, and text widget types because they don't have steps.



**4.** To compare the original guery against the final one, click

Analytics modifies step queries based on interactions with other widgets. It adds filters based on faceting and global filters, and can modify the query based on bindings. The final step in the following example has three filters added to the original query.

#### Original Query

```
1  q = load "opportunity";
2  q = foreach q generate (case when 'Amount' < 5000000 then "High" when 'Amount' < 20000000 then "Med" else
    "#Low" end) as 'Classification', 'Amount' as 'Amount', 'CloseDate' as 'CloseDate',
    'ForecastCategoryName' as 'ForecastCategoryName', 'Name' as 'Name', 'Owner.Name' as 'Owner.Name',
    'StageName' as 'StageName';
3  q = filter q by 'Classification' == "High";
4  q = limit q 10000;</pre>
```

### Final Query

5. If the step query has a binding, review the bindings trace to understand how Analytics resolves the binding.

```
verification problem in the problem is a selection of the problem in the problem is a selection of the problem in the problem is a selection of the problem in the problem is a selection of the problem is a selection
```

The easiest way to understand the bindings trace is to start from the bottom. In this example, you can see the results of both cell binding functions. You can also see that the coalesce function uses the results from the second cell function. The final result of the entire binding, which appears at the top, shows 5.

# Step Properties for Analytics Dashboards

Step properties define the query that returns results to display in the widget. These properties also specify how the widget behaves and interacts with other widgets in the Analytics dashboard. The properties apply to dashboards created in the dashboard designer only.

| Property                       | Description   |
|--------------------------------|---|
| Display Label                  | Step label. Use to provide a descriptive label for the step.  |
| Broadcast selections as facets | Controls whether the step's selections are broadcasted as facets. For more information about faceting, see Filter the Dashboard Results with Faceting .   |
| Apply filters from faceting    | Controls whether the step listens for broadcasted facets and applies them as filters.   |
| Apply global filters           | Apply the global filters to this step. This option is only available for steps that query datasets.   |
| Selection Type                 | Indicate whether dashboard viewers can make one or multiple selections in the associated widget. You can also specify whether selections are required. If a selection is required, set an initial selection in the Initial Selections step property. If a selection is required but not set, Analytics selects the first value in the list. |
| Initial Selections             | Show the initial selections that are applied when the dashboard opens. For information about setting initial selections, see Set Initial Selections in the Dashboard .  |

# Make the Dashboard Widgets Interactive

Analytics dashboards have unique features that allow you to make the widgets interactive. For example, widgets in the dashboard can be filtered to show only results for the region that's selected in a list widget. Or, when the value of a number widget can change to red when it falls below a threshold.

Watch a Demo: Make Wave Dashboards Interactive (English Only)

#### IN THIS SECTION:

#### Filter the Dashboard Results with Faceting

Faceting is the simplest and most common way to specify interactions between widgets. Widgets can be linked simply by enabling faceting in their associated steps. When the underlying steps are faceted, selections made on chart, date, list, range, and toggle widgets automatically filter other widgets in the dashboard. For example, when you select a rep in the Sales Rep list widget, Analytics filters the dashboard's table widget based on the rep.

#### Dynamically Modify the Query, Initial Selection, and Widgets with Bindings

Compared to facets, bindings are more programmatic, and provide more ways to specify interactions. Bindings can dynamically modify a step query, set an initial filter selection, or change a widget's appearance. For example, you can change the measure in a step query based on a selection in a static step. You can initially filter a region-based dashboard based on the country of the logged-in user. Or, you can change the color of the metric in a number widget based on whether its value is high, medium, or low. Each binding is unidirectional, meaning it affects other steps, but other steps don't affect it.

SEE ALSO:

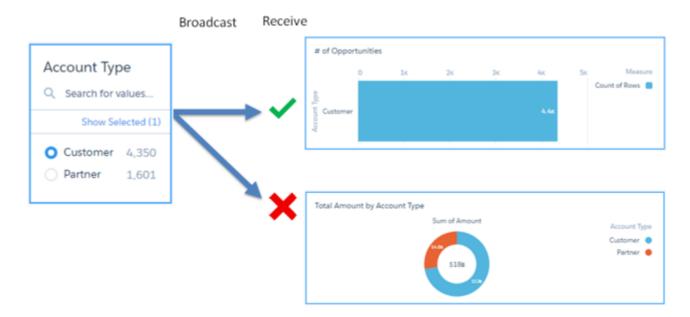
Manage Steps for Widgets

# Filter the Dashboard Results with Faceting

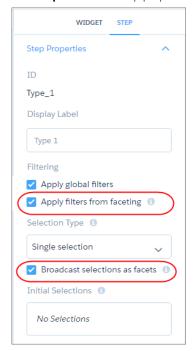
Faceting is the simplest and most common way to specify interactions between widgets. Widgets can be linked simply by enabling faceting in their associated steps. When the underlying steps are faceted, selections made on chart, date, list, range, and toggle widgets automatically filter other widgets in the dashboard. For example, when you select a rep in the Sales Rep list widget, Analytics filters the dashboard's table widget based on the rep.

By default, steps from the same dataset are faceted together. To facet steps between different data sources—like different datasets or static steps—first connect them on page 518. Steps with a cogrouping that query multiple datasets only facet steps based on the first dataset specified in the datasets field in the dashboard JSON.

The following diagram illustrates how two faceting options, **Broadcast selections as facets** and **Apply filters from faceting**, work together to filter results. When a selection is made in the Account Type widget, Analytics broadcasts that selection to any step that receives facets. Analytics filters the "# of Opportunities" widget because **Apply filters from faceting** is enabled. The "Total Amount by Account Type" widget isn't filtered because **Apply filters from faceting** is disabled.



- 1. Click to edit the dashboard.
- **2.** Select the widget that uses the step. The panel shows the widget properties.
- **3.** Click **Step** to view the step properties.



**4.** Set the following faceting options. By default, they're enabled.

#### Broadcast selections as facets

Controls whether the step's selections are broadcasted as facets.

#### Apply filters from faceting

Controls whether the step listens for broadcasted facets and applies them as filters.

- Note: Keep the following considerations in mind when configuring faceting for steps.
  - The **Apply filters from faceting** option appears as read only for the staticflex step type because other steps can't faceted it.
  - The **Broadcast selections as facets** and **Apply filters from faceting** options appear as read only for the apex and sogl step types because they don't support faceting.
  - The **Broadcast selections as facets** and **Apply filters from faceting** options appear as read only for the aggregate, grain, and static step types because they don't support these options. To change the faceting behavior for these step types, edit the isFacet property in the dashboard JSON. For a list of the supported faceting JSON properties for each step type, see the *Analytics Dashboard JSON Reference*.
- **5.** To save the changes, save the dashboard.

#### IN THIS SECTION:

#### Configure Cross-Dataset Faceting with Connected Data Sources

By default, steps from the same dataset are faceted—automatically filtering each other. To facet steps from different datasets or even static steps in a dashboard designer dashboard, connect them using common fields between them.

#### SEE ALSO:

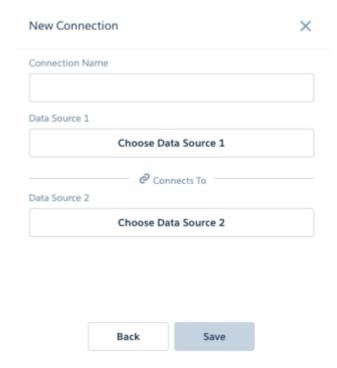
Add Selection-Based Filter Widgets to Enable Users to Filter the Results

### Configure Cross-Dataset Faceting with Connected Data Sources

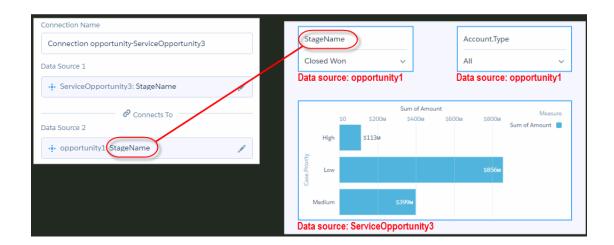
By default, steps from the same dataset are faceted—automatically filtering each other. To facet steps from different datasets or even static steps in a dashboard designer dashboard, connect them using common fields between them.



- 1. Click / to edit the dashboard.
- 2. Click and then select Connect Data Sources.
- 3. Click New Connection.



- **4.** Enter a name for the connection.
- 5. Click **Choose Data Source 1** to select the first data source. For each data source, select a dataset or a static step used in the dashboard.
- **6.** Choose one field from the data source so that Analytics can match records between the specified sources.
  - Note: Faceting only works on the fields used to define the connection. For example, the connection in the following screenshot is based on the StageName field. As a result, the StageName list widget is faceted to the bar chart. If a selection is made in the Account. Type list widget, faceting doesn't happen—the results are not filtered. To enable faceting on the Account. Type field, define another connection based on this field using the same data sources.



- 7. Click **Choose Data Source 2** to select the second source, and then choose a field.
- **8.** To add another data source, click **Add Data Source**. This option appears after you connect two data sources. You can connect two or more data sources.
- 9. Click Save.

# Dynamically Modify the Query, Initial Selection, and Widgets with Bindings

Compared to facets, bindings are more programmatic, and provide more ways to specify interactions. Bindings can dynamically modify a step query, set an initial filter selection, or change a widget's appearance. For example, you can change the measure in a step query based on a selection in a static step. You can initially filter a region-based dashboard based on the country of the logged-in user. Or, you can change the color of the metric in a number widget based on whether its value is high, medium, or low. Each binding is unidirectional, meaning it affects other steps, but other steps don't affect it.

For more information about bindings, see Analytics Bindings Developer Guide

# Set Initial Selections and Global Filters in the Dashboard

Set the initial selections and global filters that appear when the dashboard first opens. To analyze the results from a different angle, the dashboard viewer can change the initial selections and, if configured, global filters while viewing the dashboard.

#### IN THIS SECTION:

### Set Initial Selections in the Dashboard

If the Analytics dashboard contains selection-based widgets (chart, date, list, range, or toggle), you can set initial selections that are applied when the dashboard first opens. For example, you can select a bar in a bar chart and set that as the initial selection. If the underlying step for the bar chart is faceted, other widgets with faceted steps are filtered based on this initial selection. While viewing the dashboard, a user can change the selection in the chart to filter the results differently or remove the selection and filters altogether.

#### Set Initial Global Filters in the Dashboard

If the Analytics dashboard contains global filters, you can set the initial filters that are applied when the dashboard first opens. If a global filter is unlocked, the dashboard viewer can change the filter while viewing the dashboard. Global filters apply to all steps in the dashboard unless a step is configured to ignore these filters.

### Set Initial Selections in the Dashboard

If the Analytics dashboard contains selection-based widgets (chart, date, list, range, or toggle), you can set initial selections that are applied when the dashboard first opens. For example, you can select a bar in a bar chart and set that as the initial selection. If the underlying step for the bar chart is faceted, other widgets with faceted steps are filtered based on this initial selection. While viewing the dashboard, a user can change the selection in the chart to filter the results differently or remove the selection and filters altogether.

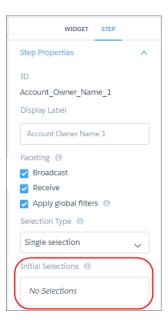
If a widget's step is configured to require a selection, set the initial selection. If you don't, Analytics selects the first value when the dashboard opens.

Analytics ignores the selection if it can't find the initial selection value in the step results when opening the dashboard. This issue can occur when the underlying step for the selection widget has a saql step type and not all results are returned. (This issue doesn't happen for other step types.) For more information about query limits for a saql step type, see saql Step Type Properties.

- 1. While editing the dashboard, click \_\_\_\_ and then select **Pick Initial Selections**. Analytics previews the dashboard.
- **2.** Make selections in chart, date, list, range, or toggle widgets. You can also select a row in a compare table.

#### 3. Click Done.

Analytics saves the selections as start values for the widget steps. You can view the initial selections in the step properties.



#### IN THIS SECTION:

#### Dynamically Set Initial Selections Based on the Dashboard Viewer

You can set initial filter selections to show information that's relevant to the logged in user. For example, you can filter a sales dashboard such that each sales rep views only their sales opportunities and performance. You can set initial filter selections based on the user ID, user name, role ID, or role name of the logged in user.

#### SEE ALSO:

Add Selection-Based Filter Widgets to Enable Users to Filter the Results

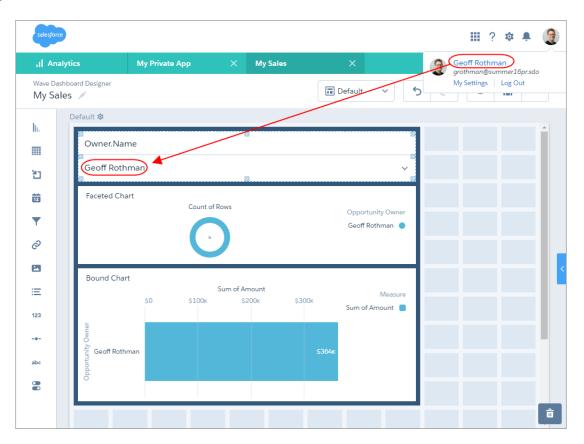
Modify the Step Results Based on the Dashboard Viewer

### Dynamically Set Initial Selections Based on the Dashboard Viewer

You can set initial filter selections to show information that's relevant to the logged in user. For example, you can filter a sales dashboard such that each sales rep views only their sales opportunities and performance. You can set initial filter selections based on the user ID, user name, role ID, or role name of the logged in user.

You can set initial selections based on the following Salesforce user tokens: user.id, user.name, user.rolename, and user.roleid. At runtime, Analytics retrieves the values of these tokens from Salesforce environment variables—these values don't come from datasets.

- 1 Tip: To set the initial selection based on other user attributes of the logged-in user, like their country, use a binding based on a user token. For more information, see the Analytics Bindings Developer Guide.
- **Example**: When the dashboard opens, you want it to dynamically filter charts based on the name of the currently logged in user.



To add the filter, create a list widget and then, in the dashboard JSON, add an initial filter selection based on the user.name token in the widget's step (Owner Name 1). This selection filters the following charts:

- Donut chart because its step (Owner\_Name\_3) is faceted with step Owner\_Name\_1.
- Bar chart because its step (Owner Username 3) contains a binding based on step Owner Name 1.

See the bold text in the following dashboard JSON to see how to set the initial filter, as well as facet and bind the steps.

```
"label": "My Sales",
"state": {
    "gridLayouts": [
    ],
    "layouts": [],
    "steps": {
        "Owner Name 1": {
            "datasets": [
                    "id": "0FbB0000000pNNKAY",
                    "label": "Opportunities",
                    "name": "opportunity",
                   "url": "/services/data/v38.0/wave/datasets/0FbB00000000pNNKAY"
            ],
            "isFacet": true,
            "isGlobal": false,
            "query": {
                "measures": [
                    Γ
                         "count",
                         11 + 11
                ],
                "groups": [
                    "Owner.Name"
                1
            },
            "selectMode": "multi",
            "start": [
                "!{User.Name}"
            "type": "aggregateflex",
            "useGlobal": false,
            "visualizationParameters": {
                "options": {}
        },
        "Owner Name 3": {
            "datasets": [
                     "id": "0FbB00000000pNNKAY",
                    "label": "Opportunities",
                     "name": "opportunity",
```

```
"url": "/services/data/v38.0/wave/datasets/0FbB0000000pNNKAY"
       }
   ],
    "isFacet": true,
    "isGlobal": false,
    "query": {
        "measures": [
           [
                "count",
        ],
        "groups": [
            "Owner.Name"
        ],
        "order": [
            [
                -1,
                {
                    "ascending": false
            ]
        ]
   },
    "selectMode": "single",
    "type": "aggregateflex",
    "useGlobal": true,
    "visualizationParameters": {
        "visualizationType": "hbar",
        "options": {}
   }
},
"Owner_Username_3": {
    "datasets": [
            "id": "0FbB00000000pNNKAY",
            "label": "Opportunities",
            "name": "opportunity",
           "url": "/services/data/v38.0/wave/datasets/0FbB0000000pNNKAY"
        }
   ],
    "isFacet": false,
    "isGlobal": false,
    "query": {
        "measures": [
            [
                "sum",
                "Amount"
        ],
        "groups": [
            "Owner.Name"
```

```
"filters": [
                             "Owner.Name",
                             "{{column(Owner_Name_1.selection,
[\"Owner.Name\"]).asObject()}}",
                    ],
                    "order": [
                        [
                            -1,
                             {
                                "ascending": false
                        ]
                },
                "selectMode": "multi",
                "type": "aggregateflex",
                "useGlobal": true,
                "visualizationParameters": {
                    "visualizationType": "hbar",
                    "options": {}
                }
        },
        "widgetStyle": {
            "backgroundColor": "#FFFFFF",
            "borderColor": "#E6ECF2",
            "borderEdges": [],
            "borderRadius": 0,
            "borderWidth": 1
        },
        "widgets": {
            "listselector_2": {
                "parameters": {
                    "compact": false,
                    "expanded": true,
                    "exploreLink": false,
                    "instant": true,
                    "measureField": "count",
                    "step": "Owner_Name_1",
                    "title": "Owner.Name"
                "type": "listselector"
            "chart 2": {
                "parameters": {
                    "autoFitMode": "fit",
                    "showValues": true,
                    "legend": {
                        "showHeader": true,
                        "show": true,
```

```
"position": "right-top",
            "inside": false
        },
        "axisMode": "sync",
        "visualizationType": "hbar",
        "exploreLink": true,
        "title": {
            "label": "Bound Chart",
            "align": "left",
            "subtitleLabel": ""
        },
        "trellis": {
            "enable": false,
            "type": "x",
            "chartsPerLine": 4
        } ,
        "measureAxis2": {
           "showTitle": true,
            "showAxis": true,
           "title": ""
        },
        "measureAxis1": {
            "showTitle": true,
            "showAxis": true,
            "title": ""
        },
        "theme": "wave",
        "step": "Owner Username 3",
        "dimensionAxis": {
            "showTitle": true,
            "showAxis": true,
            "title": ""
   },
    "type": "chart"
"chart 4": {
    "parameters": {
       "visualizationType": "pie",
        "exploreLink": true,
        "title": {
            "label": "Faceted Chart",
            "align": "left",
            "subtitleLabel": ""
        } ,
        "step": "Owner Name 3",
        "theme": "wave",
        "legend": {
            "show": true,
            "showHeader": true,
           "inside": false,
            "position": "right-top"
        },
        "trellis": {
```

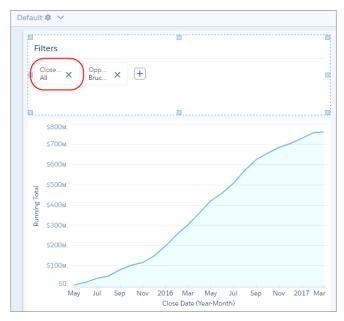
```
"enable": false,
                    "type": "x",
                     "chartsPerLine": 4
                },
                "showMeasureTitle": true,
                "showTotal": true,
                "inner": 70
            },
            "type": "chart"
        },
        "container 1": {
            "type": "container",
            "parameters": {
                "documentId": "",
                "fit": "original",
                "alignmentX": "left",
                "alignmentY": "top"
        }
    }
},
"datasets": [
    {
        "id": "0FbB0000000pNNKAY",
        "label": "Opportunities",
        "name": "opportunity",
        "url": "/services/data/v38.0/wave/datasets/0FbB00000000pNNKAY"
    }
]
```

For information about editing the dashboard JSON, see the Analytics Dashboard JSON Reference.

# Set Initial Global Filters in the Dashboard

If the Analytics dashboard contains global filters, you can set the initial filters that are applied when the dashboard first opens. If a global filter is unlocked, the dashboard viewer can change the filter while viewing the dashboard. Global filters apply to all steps in the dashboard unless a step is configured to ignore these filters.

- 1. While editing the dashboard, select the global filter widget panel.
- 2. In the panel widget, select the filter that you'd like to change.



- 3. Make the change and then click **Apply**.
- 4. Save the dashboard.

SEE ALSO:

Add a Global Filter Panel Widget to Filter Data from the Dashboard

# Generate Unique Analytics Dashboard Layouts for Different Devices

After you add widgets to the dashboard, optimize the layout for each device on which the dashboards can be viewed. For example, you can remove widgets from a mobile phone layout to reduce the dashboard size for the smaller screen. You can also move widgets around in one layout and it doesn't affect the other layouts.

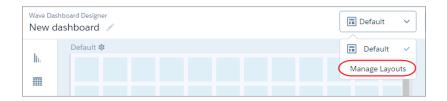
Watch a Demo: Optimize Wave Dashboards for Devices with Layouts (English Only)

When you generate a new layout, Analytics adds the widgets from the currently selected layout to the new layout. If the current layout contains multiple pages, Analytics also copies the pages to the new layout.

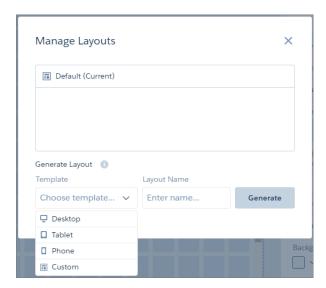


Note: Although you can add all chart types to a mobile layout, some aren't supported on mobile devices. For more information, see Analytics mobile limitations.

- 1. Open in the dashboard designer dashboard.
- 2. Because each layout can contain different widgets, open the layout that contains the widgets that you want to include in your new layout.
- **3.** From the Layouts menu, select **Manage Layouts**.



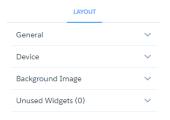
**4.** Select the layout template, and enter a unique layout name.



Each layout template comes with predefined layout properties that you can change.

#### 5. Click Generate.

The layout properties appear for the new layout. If needed, click 🌼 to show the Layout panel.



**6.** In the Layout panel, expand the following sections and change the default properties, if needed.

### General

Set the layout name, designer grid settings, and background color.

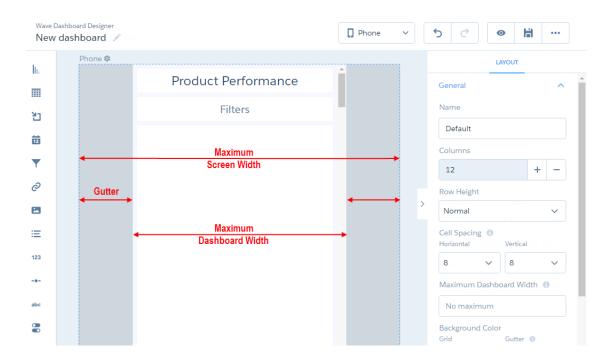
### Device

Specify information about the devices that can use this layout. For more information about how Analytics uses these properties to choose the right layout, see Rules for Choosing a Layout for a Device.

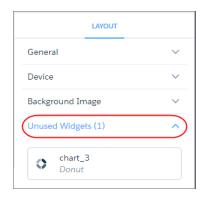
### **Background Image**

To apply a background image to the entire dashboard when this layout is used, enter the details about the background image. You don't have to include a background image.

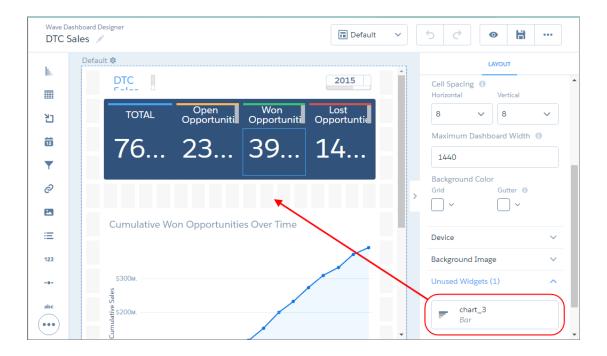
The designer previews the dashboard and layout based on the layout property settings. The designer updates the preview in real time so that you can see how your changes affect the display. If you shrink the maximum dashboard width, the designer shows you how the dashboard fits when using this layout. If needed, the designer rearranges the widgets to fit the new size.



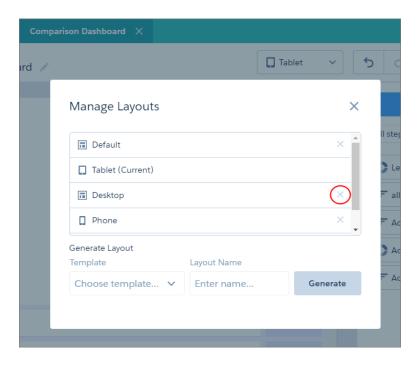
- **7.** Rearrange the widgets, if needed.
- 8. To hide a widget from the layout, select the widget, and click ...
  If you hide a widget, it appears in the Unused Widgets section of the layout properties.



9. To add an unused widget to the layout, drag the widget from the Unused Widgets section to the canvas.



- **10.** To create a widget, drag the widget from the widget toolbar to the canvas.
  - Note: Analytics adds the widget only to the current layout. To add the widget to another layout, open the other layout and drag the widget from the "Unused Widgets" section of the layout properties.
- **11.** To save your layout changes, save the dashboard.
- 12. To delete a layout, in the Layouts menu, click **Manage Layouts**, and then click  $\times$  next to the layout.





Note: You can't delete the layout that's currently open. To delete the current layout, switch to another one first.

### IN THIS SECTION:

### Layout Properties for Analytics Dashboards

Layout properties specify the layout name, designer grid settings, background settings, and requirements for devices that can use this layout. The properties apply only to dashboards created in the dashboard designer.

#### Rules for Choosing a Layout for a Device

If multiple layouts are defined for a dashboard, Analytics chooses the optimal layout when displaying the dashboard on a device. To determine the optimal layout, Analytics uses the device properties specified for each layout.

# Layout Properties for Analytics Dashboards

Layout properties specify the layout name, designer grid settings, background settings, and requirements for devices that can use this layout. The properties apply only to dashboards created in the dashboard designer.

# **General Properties**

These general properties apply to the specified layout.

| Property                | Description  |
|-------------------------|--|
| Name                    | Name of the layout.  |
| Columns                 | Number of columns in the dashboard designer grid. Increase the number of columns to increase the precision in the layout.  |
| Row Height              | Height of the rows in the dashboard designer grid. Values are <b>Normal</b> and <b>Fine</b> . When using the <b>Fine</b> option, the vertical spacing is set to 0 and can't be changed. Analytics determines the default sizes of widgets based on number of columns and the row height to ensure that the widgets are readable and retain their relative sizes. |
| Cell Spacing            | Horizontal and vertical spacing (in pixels) between cells in the dashboard designer grid.  |
| Maximum Dashboard Width | Maximum width (in pixels) that the dashboard can use. If needed, Analytics rearranges the existing dashboard widgets based on this setting in the layout.  |
| Background Color        | You can set the background color of the following areas.  Grid  Color of the dashboard designer grid.  Gutter  Color of the gutter that appears when the device's screen is wider than the dashboard's maximum width.  |

#### **Device Properties**

Analytics uses these values to choose the optimal layout for the device accessing the dashboard.

| Property     | Description   |
|--------------|---|
| Screen Width | Width of the devices supported by this layout. Specify the minimum and maximum width (in pixels). |
| Orientation  | Orientation of the devices supported by this layout.  |
| Platform     | Platform of the devices supported by this layout.   |

### **Background Image Properties**

| Property        | Description   |
|-----------------|---|
| Image           | The file name of the image. The image must be available in the gallery of the Analytics app that contains the dashboard. This property applies to background images created during or after Spring '17.               |
| Image ID        | 15-character ID of the image. The image must be uploaded to the Documents tab of Salesforce with the Externally Available Image option enabled. This property applies to background images created before Spring '17. |
| Image Scale     | Indicate how to fit the image in the background.  |
| Image Alignment | Horizontal and vertical alignment of the background image.  |

# Rules for Choosing a Layout for a Device

If multiple layouts are defined for a dashboard, Analytics chooses the optimal layout when displaying the dashboard on a device. To determine the optimal layout, Analytics uses the device properties specified for each layout.

Analytics uses the following rules when determining which layout to use for a device.

- 1. A layout is eligible for use when the device accessing the dashboard meets all the device properties set in the Layout panel.
- 2. If more than one layout is eligible, the one with the most device properties set is used. If there's a tie, the most recently defined layout is used.
- **3.** If no layouts are eligible with the device, the first defined layout is used.

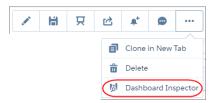
# Optimize Dashboard Performance

Before you finalize the dashboard, run a performance check on the dashboard and its steps to ensure that everything is running optimally. The dashboard inspector identifies different types of bottlenecks, like query issues and redundant queries, and provides recommendations to improve performance. Because dashboard layouts can contain different widgets (and steps), run the inspector on each layout. If a dashboard contains multiple pages, run the inspector on each page. The inspector provides results only for the current page.

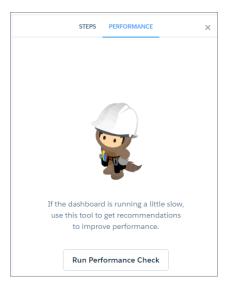
1. While browsing the app, open the dashboard in view mode.

The dashboard inspector is not available while running the app, editing the dashboard, or previewing an embedded dashboard outside of Analytics.

**2.** To open the dashboard inspector, click \_\_\_\_ and then **Dashboard Inspector**.

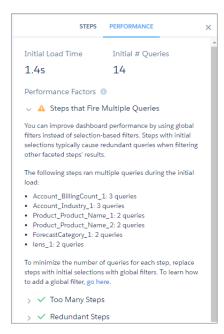


**3.** To review the dashboard-level performance, open the Performance tab in the dashboard inspector.



### 4. Click Run Performance Check.

The Performance Factors section shows all factors by which the dashboard is evaluated.

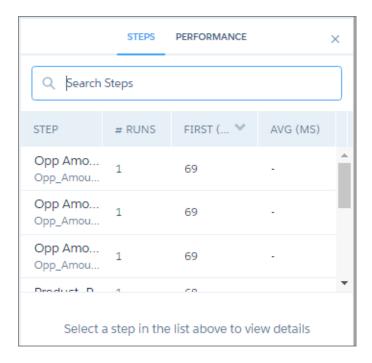


- Note: If your dashboard contains multiple pages, the dashboard inspector shows results for the current page being viewed.
- 5. If a warning icon ( 🛕 ) appears next to a factor, expand the factor to learn how to fix the issue to improve the dashboard's performance.

Ignore the factors with a green checkmark ( 🗸 ) because these issues don't apply to the dashboard.

**6.** To analyze the performance of all steps in the dashboard, click the Steps tab.

The table lists all steps that ran when the dashboard loaded. If the dashboard contains multiple pages, the table lists the steps that ran for the current page. Each time you switch pages, newly run steps are added to the table, and previously run steps, which are no longer used, are listed as unused.



The table shows the following metrics for each step.

| Metric     | Description  |
|------------|--|
| # Runs     | Number of times the step ran. Steps may run multiple times because of faceting or bindings. This number includes step runs that execute the query or use cached results. |
| First (MS) | Number of milliseconds to run the step for the first time. The first run typically, but not always, executes the query.  |
| Avg (MS)   | Average number of milliseconds to run the query. Only step runs that execute the query are included in this calculation.   |

**7.** Select a step in the table to view additional details about the query and the last run.

For more information about step performance, see Optimize a Step.

# Keyboard Shortcuts for Analytics Dashboards and Lenses

You can do some basic actions from your keyboard. The dashboard designer shortcuts vary based on whether you are using the classic designer or dashboard designer.

| Lens Keyboard Shortcut         | Description                |
|--------------------------------|----------------------------|
| L                              | Clip to dashboard designer |
| S                              | Save                       |
| N                              | Clone in new tab           |
| Ctrl+E (Windows) Cmd+E (macOS) | Open JSON Editor           |

| Classic Designer Keyboard Shortcut                           | Description                             |
|--|---|
| Arrow keys   | Move the widget in 10-pixel increments. |
| Ctrl+Arrow keys (Windows) Cmd+Arrow keys (macOS)             | Move the widget in 1-pixel increments.  |
| Shift+Arrow keys   | Resize the widget by 10 pixels.         |
| Ctrl+Shift+Arrow keys (Windows) Cmd+Shift+Arrow keys (macOS) | Resize the widget by 1 pixel.           |
| X  | Delete the widget from the canvas.      |
|  | Put the widget beneath other widgets.   |
|  | Put the widget on top of other widgets. |

| Dashboard Designer Keyboard Shortcut | Description  |
|--------------------------------------|--|
| Tab                                  | Focus on next item in the dashboard.                   |
| Shift+Tab                            | Focus on previous item in the dashboard.               |
| Spacebar                             | Select a widget to move it when editing the dashboard. |
| Arrow keys                           | Move the selected widget when editing the dashboard.   |
| С                                    | Share the dashboard when viewing it.                   |
| E                                    | Toggle between previewing or editing the dashboard.    |

| Dashboard Designer Keyboard Shortcut | Description   |
|--------------------------------------|---|
| S                                    | Save the dashboard.   |
| X                                    | Redo the change.  |
| Z                                    | Undo the latest change.   |
| Delete                               | Delete the selected widgets while editing the dashboard.                  |
| Drag+Shift                           | Reflow other widgets down when dragging a widget in the dashboard canvas. |
|                                      | Note: Drag the widget before you press <b>Shift</b> .                     |
| Ctrl+Click (Windows)                 | Select multiple widgets while editing the dashboard.                      |
| Cmd+Click (macOS)                    |   |
| Ctrl+A (Windows)                     | Select all widgets in the canvas while editing the dashboard.             |
| Cmd+A (macOS)                        |   |

| JSON Editor Keyboard Shortcut                    | Description                                   |
|--|---|
| Ctrl+E (Windows) Cmd+E (macOS)                   | View dashboard with changes to JSON.          |
| Ctrl+3 (Windows) Cmd+3 (macOS)                   | Disregard changes and load the original JSON. |
| Ctrl+D (Windows) Cmd+D (macOS)                   | Delete line                                   |
| Alt+Shift+Down (Windows) Cmd+Option+Down (macOS) | Copy lines down                               |
| Alt+Shift+Up (Windows) Cmd+Option+Up (macOS)     | Copy lines up                                 |
| Alt+Down (Windows) Option+Down (macOS)           | Move lines down                               |
| Alt+Up (Windows) Option+Up (macOS)               | Move lines up                                 |

| JSON Editor Keyboard Shortcut                         | Description                   |
|---|-------------------------------|
| Alt+Delete (Windows) Ctrl+K (macOS)                   | Delete to end of line         |
| Alt+Backspace (Windows) Cmd+Delete (macOS)            | Delete to start of line       |
| Ctrl+Delete (Windows)                                 | Delete word to the right      |
| Ctrl+A (Windows) Cmd+A (macOS)                        | Select all                    |
| Shift+Left (Windows) Shift+Left (macOS)               | Select character to the left  |
| Shift+Right (Windows) Shift+Right (macOS)             | Select character to the right |
| Ctrl+Shift+Left (Windows) Option+Shift+Left (macOS)   | Select word to the left       |
| Ctrl+Shift+Right (Windows) Option+Shift+Right (macOS) | Select word to the right      |
| Shift+Home (Windows) Shift+Cmd+Left (macOS)           | Select to start of line       |
| Shift+End (Windows) Shift+Cmd+Right (macOS)           | Select to end of line         |
| Shift+Up (Windows) Shift+Up (macOS)                   | Select up                     |
| Shift+Down (Windows) Shift+Down (macOS)               | Select down                   |
| Shift+PageUp (Windows)                                | Select page up                |
| Shift+PageDown (Windows)                              | Select page down              |

| JSON Editor Keyboard Shortcut                     | Description                |
|---|----------------------------|
| Ctrl+Shift+Home (Windows) Cmd+Shift+Up (macOS)    | Select to start            |
| Ctrl+Shift+End (Windows) Cmd+Shift+Down (macOS)   | Select to end              |
| Ctrl+Shift+D (Windows) Cmd+Shift+D (macOS)        | Duplicate selection        |
| Ctrl+Shift+P (Windows)                            | Select to matching bracket |
| Left (Windows) Left, Ctrl+B (macOS)               | Go to left                 |
| Right (Windows) Right, Ctrl+F (macOS)             | Go to right                |
| Ctrl+Left (Windows) Option+Left (macOS)           | Go to word left            |
| Ctrl+Right (Windows) Option+Right (macOS)         | Go to word right           |
| Up (Windows) Up (macOS)                           | Go line up                 |
| Down (Windows) Down, Ctrl+N (macOS)               | Go line down               |
| Alt+Left, Home (Windows) Cmd+Left, Ctrl+A (macOS) | Go to line start           |
| PageUp (Windows)                                  | Go to page up              |
| PageDown (Windows)                                | Go to page down            |
| Ctrl+Home (Windows) Cmd+Up (macOS)                | Go to start                |

| JSON Editor Keyboard Shortcut    | Description            |
|----------------------------------|------------------------|
| Ctrl+End (Windows)               | Go to end              |
| Cmd+Down (macOS)                 |                        |
| Ctrl+L (Windows)                 | Go to line             |
| Cmd+L (macOS)                    |                        |
| Ctrl+P (Windows)                 | Go to matching bracket |
| Ctrl+F (Windows)                 | Find                   |
| Cmd+F (macOS)                    |                        |
| Ctrl+H or Ctrl+F twice (Windows) | Replace                |
| Cmd+Option+F (macOS)             |                        |
| Ctrl+K (Windows)                 | Find next              |
| Cmd+G (macOS)                    |                        |
| Ctrl+Shift+K (Windows)           | Find previous          |
| Cmd+Shift+G (macOS)              |                        |

| SAQL Editor Keyboard Shortcut | Description        |
|-------------------------------|--------------------|
| Ctrl+D (Windows)              | Delete line        |
| Cmd+D (macOS)                 |                    |
| Alt+Shift+Down (Windows)      | Copy lines down    |
| Cmd+Option+Down (macOS)       |                    |
| Alt+Shift+Up (Windows)        | Copy lines up      |
| Cmd+Option+Up (macOS)         |                    |
| Alt+Down (Windows)            | Move lines down    |
| Option+Down (macOS)           |                    |
| Alt+Up (Windows)              | Move lines up      |
| Option+Up (macOS)             |                    |
| Alt+Delete (Windows)          | Delete to line end |
|                               |                    |

| SAQL Editor Keyboard Shortcut                         | Description          |
|---|----------------------|
| Ctrl+K (macOS)  |                      |
| Alt+Backspace (Windows) Cmd+Delete (macOS)            | Delete to line start |
| Ctrl+Delete (Windows) Option+Delete (macOS)           | Delete word right    |
| Ctrl+A (Windows) Cmd+A (macOS)                        | Select all           |
| Shift+Left (Windows) Shift+Left (macOS)               | Select left          |
| Shift+Right (Windows) Shift+Right (macOS)             | Select right         |
| Ctrl+Shift+Left (Windows) Option+Shift+Left (macOS)   | Select word left     |
| Ctrl+Shift+Right (Windows) Option+Shift+Right (macOS) | Select word right    |
| Shift+Home (Windows)                                  | Select to line start |
| Shift+End (Windows)                                   | Select to line end   |
| Shift+Up (Windows) Shift+Up (macOS)                   | Select up            |
| Shift+Down (Windows) Shift+Down (macOS)               | Select down          |
| Shift+PageUp (Windows)                                | Select page up       |
| Shift+PageDown (Windows)                              | Select page down     |
| Ctrl+Shift+Home (Windows) Cmd+Shift+Up (macOS)        | Select to start      |

| SAQL Editor Keyboard Shortcut | Description                |
|-------------------------------|----------------------------|
| Ctrl+Shift+End (Windows)      | Select to end              |
| Cmd+Shift+Down (macOS)        |                            |
| Ctrl+Shift+D (Windows)        | Duplicate selection        |
| Cmd+Shift+D (macOS)           |                            |
| Ctrl+Shift+P (Windows)        | Select to matching bracket |
| Left (Windows)                | Go to left                 |
| Left, Ctrl+B (macOS)          |                            |
| Right (Windows)               | Go to right                |
| Right, Ctrl+F (macOS)         |                            |
| Ctrl+Left (Windows)           | Go to word left            |
| Option+Left (macOS)           |                            |
| Ctrl+Right (Windows)          | Go to word right           |
| Option+Right (macOS)          |                            |
| Up (Windows)                  | Go line up                 |
| Up, Ctrl+P (macOS)            |                            |
| Down (Windows)                | Go line down               |
| Down, Ctrl+N (macOS)          |                            |
| Alt+Left, Home (Windows)      | Go to line start           |
| Cmd+Left, Ctrl+A (macOS)      |                            |
| Alt+Right, End (Windows)      | Go to line end             |
| Cmd+Right(macOS)              |                            |
| PageUp (Windows)              | Go to page up              |
| PageDown (Windows)            | Go to page down            |
| Ctrl+V (macOS)                |                            |
| Ctrl+Home (Windows)           | Go to start                |
| Cmd+Up (macOS)                |                            |
|                               |                            |

| SAQL Editor Keyboard Shortcut    | Description            |
|----------------------------------|------------------------|
| Ctrl+End (Windows)               | Go to end              |
| Cmd+Down (macOS)                 |                        |
| Ctrl+L (Windows)                 | Go to line             |
| Cmd+L (macOS)                    |                        |
| Ctrl+P (Windows)                 | Go to matching bracket |
| Ctrl+H or Ctrl+F twice (Windows) | Find                   |
| Cmd+F (macOS)                    |                        |
| Ctrl+H (Windows)                 | Replace                |
| Cmd+Option+F (macOS)             |                        |
| Ctrl+K (Windows)                 | Find next              |
| Cmd+G (macOS)                    |                        |
| Ctrl+Shift+K (Windows)           | Find previous          |
| Cmd+Shift+G (macOS)              |                        |
|                                  |                        |

#### SEE ALSO:

Convert Your Classic Designer Dashboard to Dashboard Designer

# Build a Dashboard with the Classic Designer

The classic designer is the legacy designer that enables you to build basic Analytics dashboards.



**Note:** Although you can build a dashboard in the classic designer, Salesforce.com recommends using the new dashboard designer, which supports more features and is easier to use. The new designer replaces the classic designer.

### IN THIS SECTION:

- Key Differences Between the Classic Designer and Dashboard Designer
   Consider the following differences between the classic designer and the dashboard designer.
- Convert Your Classic Designer Dashboard to Dashboard Designer
   To take advantage of its new features, convert dashboards created in the classic designer to the dashboard designer.
- 3. Create the Dashboard in Classic Designer

When you create an Analytics dashboard, you can apply a prepackaged layout or start with a blank canvas to create your own layout. To build the dashboard, you can use the classic designer or the new dashboard designer. In this example, we'll use the classic designer.

# EDITIONS

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

### 4. Add Key Performance Indicators to the Analytics Dashboard

Sometimes, a single number can provide a quick and critical measurement of the business. For example, the total number of open support cases and number of new support cases open this week are key metrics that a service manager would find useful. Add Number widgets to provide key indicators to a dashboard.

### 5. Add Visualizations to the Analytics Dashboard

Add charts to visualize and interact with the data to tell a story about it. Each chart is based on the underlying query in a lens.

### 6. Facet Widgets to See Data from Multiple Angles

Widgets that come from the same dataset are faceted by default. Faceting means that when you filter one widget, all the related widgets in the Analytics dashboard are filtered in the same way. You can turn faceting on or off for each widget.

## 7. Add Images to the Analytics Dashboard

Add images to your dashboard to help your audience with context and to make the dashboard more fun to read. For example, if your dashboard is designed to help track sales of multiple products, consider distinguishing the products by their logos.

#### 8. Link to Lenses and Other Dashboards

Use links to tie an Analytics dashboard to related lenses and dashboards. This widget is useful when you want to break up analysis across multiple assets, rather than cramming it all into a single dashboard. It's also useful for creating pathways to analyze your data.

### 9. See Details About a Widget's Lens

To ensure that a widget in an Analytics dashboard is showing the right data, review details about the widget's lens.

### 10. Filter or Remove Clipped Lenses from the Analytics Dashboard

Curate the clipped lenses in a dashboard to reduce clutter. You can filter the list of clipped lenses to see which ones aren't used and then remove them from your dashboard. (This help topic applies to dashboards built in classic designer only.)

#### SEE ALSO:

Convert Your Classic Designer Dashboard to Dashboard Designer

What Is a Dashboard?

Best Practices for Building Your Own Analytics Dashboard

Keyboard Shortcuts for Analytics Dashboards and Lenses

Key Differences Between the Classic Designer and Dashboard Designer

Build a Dashboard with the Classic Designer

Build a Dashboard with the Classic Designer

# Key Differences Between the Classic Designer and Dashboard Designer

Consider the following differences between the classic designer and the dashboard designer.

- The dashboard designer provides a user interface for creating layouts for different types of devices. With the classic designer, you have to set up mobile layouts using the dashboard JSON.
- The dashboard designer provides wizards that walk you through creating widgets, with their underlying steps created behind the scenes. With the classic designer, you have to manually create the lenses in explorer, clip them, and then apply them to widgets. (A "step" in the dashboard designer is the same as a "lens" in the classic designer.)
- The dashboard designer uses snap-to-grid, letting you quickly position, align, and resize widgets. In the classic designer, you specify pixels to define each widget's position and size.
- You can create steps, including static steps, from within the dashboard designer. In classic designer, you have to clip the lens from explorer to the designer or build the step using JSON.

- The dashboard designer allows you to hide steps and properties to give you more workspace when designing a dashboard. This isn't possible in the classic designer.
- The dashboard designer has a single table widget that can be used to create a values table or compare table. The classic designer has a separate widget for each type of table.
- Unlike the box widget in the classic designer, the container widget in the dashboard designer groups widgets, which allows you to move them all at once.
- Only dasboards built with the dashboard designer support annotations and notifications.
- Only the classic designer and explorer support the following chart types: parallel coordinates, horizontal dot plot, vertical dot plot, and matrix. When clipped to the dashboard designer, these chart types convert to a bar chart.

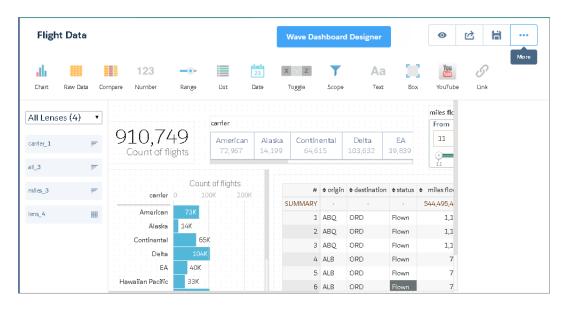
### SEE ALSO:

Build Analytics Dashboards
Build a Dashboard with the Classic Designer

# Convert Your Classic Designer Dashboard to Dashboard Designer

To take advantage of its new features, convert dashboards created in the classic designer to the dashboard designer.

When editing the dashboard, click the **Dashboard Designer** button to convert it to the new designer.



When you convert a dashboard to the new designer, Analytics makes a copy of the dashboard. Before you delete the original version of the dashboard, know that you can't open the new version in the classic designer. Any changes that you make in the new designer can't be converted back to the classic designer.

### IN THIS SECTION:

### Considerations Before Converting to the Dashboard Designer

Although dashboards created in the classic designer and dashboard designer have a similar look and feel, they use different run-time engines and have different JSON syntax. When you convert a dashboard to the dashboard designer, certain elements of your dashboard might not convert correctly. You might need to make some manual changes to preserve the original behavior.

SEE ALSO:

**Build Analytics Dashboards** 

## Considerations Before Converting to the Dashboard Designer

Although dashboards created in the classic designer and dashboard designer have a similar look and feel, they use different run-time engines and have different JSON syntax. When you convert a dashboard to the dashboard designer, certain elements of your dashboard might not convert correctly. You might need to make some manual changes to preserve the original behavior.

## Widgets

The following widget issues can arise when you convert a classic dashboard to dashboard designer.

- Dashboard designer resizes and rearranges widgets to fit them into a grid and to ensure that no widgets (except containers) overlap.
   After conversion, you can use the snap-to-grid feature in dashboard designer to quickly resize and rearrange widgets. You can also add more columns to the grid and decrease the row width to get better precision when laying out the widgets.
- Dashboard designer converts the following chart types to bar charts because it doesn't support them: calendar heatmap, parallel coordinates, horizontal dot plot, vertical dot plot, and matrix.
- Dashboard designer removes YouTube and Box widgets because it doesn't support them.
- Dashboard designer drops the setting for the Allow Filtering by step property. After the conversion, you can reapply the setting
  to the Selection Type widget property. The name and location of the property is different in dashboard designer.

### Steps

The following step issues can arise when you convert a classic dashboard to dashboard designer.

• If you specify the compare table step query in SAQL form, you can't specify custom labels for compare table columns. To specify custom labels, the step must be in compact form. You can specify the column label in the header attribute, as shown here.

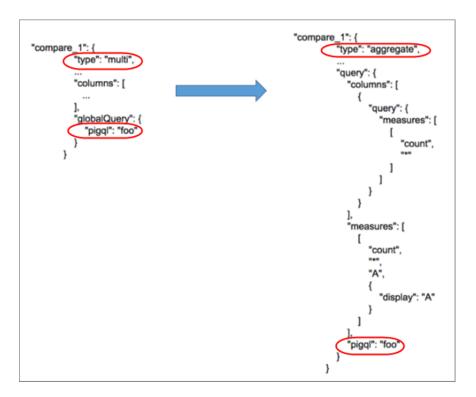
• The step breaks in the following cases:

- A field in a static step doesn't have a consistent format across all rows in the step. For instance, if a "value" field is defined as an array, then every row in the step must define "value" as an array.

For example, this step is valid:

The following step is not valid.

- A grain step contains SAQL dashboard designer doesn't support SAQL in grain steps. To fix this issue, manually convert the grain step in the dashboard JSON to an aggregateflex step using this process. Dashboard designer supports SAQL queries in the other types of steps, like aggregateflex.
- A multi step for a compare table contains a column-level SAQL query. While converting the dashboard, dashboard designer converts multi steps to aggregate steps because it doesn't support multi steps. However, it can't convert multi steps that have a column-level SAQL query. To fix this issue, re-create the step as shown here.



A multi step contains bindings. During conversion, the dashboard designer generates the measures and groupings sections in the dashboard JSON using the metadata in the columns definitions of the original multi step. However, if the metadata contains bindings, dashboard designer can't resolve them to determine what values to add to the new step. In this case, dashboard designer adds the step query, but not the values for the measures and groupings sections. To fix the step, determine which measures and groupings are being defined in the bindings specified in the query, and add them to the measures and groupings sections.



Note: If the step contains no measures, you still must specify "measures": [].

### **Mobile Layouts**

Mobile layouts created in classic designer dashboards are dropped when the dashboard is converted to dashboard designer. To fix this issue, re-create the layouts again using the layouts user interface in the dashboard designer.

### Start Values and Selections

The following issues with start values and selections can occur when you convert a classic dashboard to dashboard designer.

- When invoking an embedded dashboard, you can specify criteria to be passed as selections. If you set a selection value for a step and that value doesn't exist in the step's result set, the selection isn't applied. This behavior is different from classic designer, which blindly applies this invalid selection, resulting in no data returned.
- If a step returns more than 2,000 results, a configured start value for the step or a manually coded selection value for an embedded dashboard might not be set. Specifically, if the start or selection value isn't one of the initial 2,000 results returned by the step, the value isn't found and, therefore, not set. To reduce the chance of this happening, increase the query limit up to 10,000 in the step definition. For more information about the limit parameter in a step query, see the *Analytics SAQL Reference*.

## **Bindings**

The following binding issues can arise when you convert a classic dashboard to dashboard designer. If a binding doesn't work after the conversion, the dashboard doesn't render. If this issue occurs, contact Salesforce Customer Support.

- Dashboard designer dashboards run on the new runtime engine, which has a new bindings syntax. When converted to dashboard designer, the dashboard bindings are not updated with the new syntax. The new runtime engine can process a subset of the original bindings syntax. It can process bindings that set measure selections, groupings, filters, sort order, or limits based on string or numeric values in steps. Other bindings might not work after conversion. To resolve invalid bindings, rewrite the bindings using the new bindings syntax.
- The new runtime engine is stricter when evaluating bindings defined using the old bindings syntax. If a binding isn't well formed, the step returns an error.

For example, an error occurs if the binding contains redundant parentheses. The outermost binding function can't be enclosed in parentheses, as shown here.

```
"measures": "{{ (value(field(selection(Select_Graph),'compact'))) }}"
```

The following error occurs in this case.

```
"(value(field(selecti -^ Expecting 'FUNCTION', got '('."
```

To fix this issue, remove the outermost set of parentheses, as illustrated here.

```
"measures": "{{ value(field(selection(Select_Graph),'compact')) }}"
```

• When defining date ranges in a static step, use a double array, as shown here.

```
"step_days": {
    "values": [{
         "display": "30 Days",
         "value": [
              [
                  [
                       "day",
                       0
                  ],
                  Γ
                       "day",
                       365
                  ]
             ]
         ]
    }],
}
```

Here's the binding that references the static step.

Because the selection binding is defined inside an array, the following example throws an error.

Here's the binding that references the static step above.

SEE ALSO:

Convert Your Classic Designer Dashboard to Dashboard Designer

# Create the Dashboard in Classic Designer

When you create an Analytics dashboard, you can apply a prepackaged layout or start with a blank canvas to create your own layout. To build the dashboard, you can use the classic designer or the new dashboard designer. In this example, we'll use the classic designer.

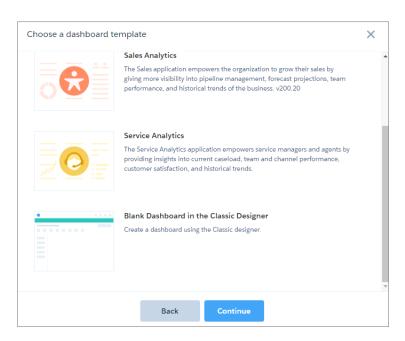
This topic is about creating dashboards in Analytics. For information on creating dashboards for reports, review the article Create a Salesforce Classic Dashboard.

From the home page, click Create > Dashboard.
 The layout templates appear.

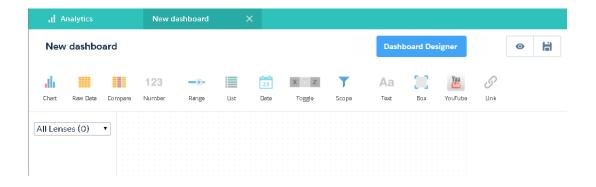
## **USER PERMISSIONS**

To create a dashboard:

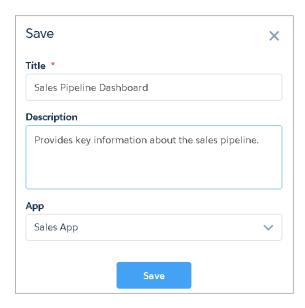
 Create and Edit Analytics Dashboards



- 2. Choose a layout template, or select an option to create a blank dashboard in the classic designer or dashboard designer. The layout templates create dashboards in the dashboard designer. In this case, we'll create a blank dashboard using the classic designer.
- **3.** Select **Blank Dashboard in the Classic Designer**, and then click **Continue**. If you haven't previously declined to use the dashboard designer, the "Ready for Dashboard Designer?" pop-up appears.
- **4.** Select **Not Now**. The classic designer opens.



**5.** Click 🛗 to save the dashboard to an app.



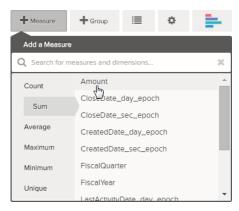
### 6. Click Save.

# Add Key Performance Indicators to the Analytics Dashboard

Sometimes, a single number can provide a quick and critical measurement of the business. For example, the total number of open support cases and number of new support cases open this week are key metrics that a service manager would find useful. Add Number widgets to provide key indicators to a dashboard.

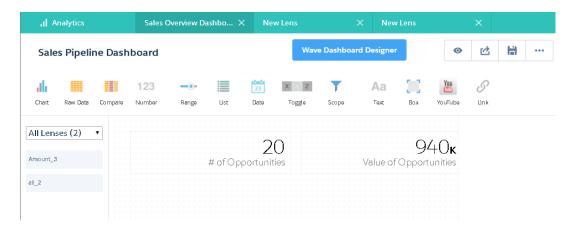


- To add a key performance indicator to a classic designer dashboard, open the Opportunities dataset, and click to calculate the total value of all opportunities in the pipeline.
  - **a.** In the measure picker, select Sum from the left column.
  - **b.** Pick a dataset field from the right column that you would like to sum. In this case, select Amount.



Note: Don't add any groupings. A number, by definition, consists of just one group. Later, you will add a chart that shows the value for different groupings.

- 2. While we're here, let's add another kind of measure to bring more context to the story that we're telling with this dashboard. For example, you can select Count of isWon to get the number of successfully closed deals.
- **3.** Click **3.** to clip this lens to the classic designer.
  - 1 Tip: If you have multiple dashboards, the lens is clipped to whichever dashboard you had open last.
- 4. In the classic designer, click the number widget ( 123 ) to create an empty number widget, and then select the first clipped lens that contains a sum of amount.
  - The number that appears in the number widget is the first measure (on the far left) that you specified in the lens.
- **5.** To choose a different measure from the lens or configure other useful properties, select the Number widget and set the properties in the Widget Properties section.
  - a. Give the widget a title. The default title, which is taken from the field name, is sometimes too cryptic for the audience.
  - **b.** For a large number, select **Shorten number** to reduce the length of the display. Doing so turns a number such as 2, 148, 352 into the more readable 2M.
- **6.** Using the same procedure, add another number widget based on the second clipped lens that provides a count of won deals. Your dashboard now contains the two number widgets.



# Add Visualizations to the Analytics Dashboard

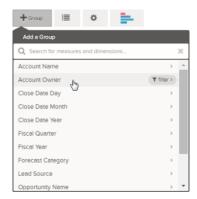
Add charts to visualize and interact with the data to tell a story about it. Each chart is based on the underlying query in a lens.

Note: This topic covers how to add a chart using classic designer. For information about how to do this with Dashboard designer, see Add Chart Widgets to Visualize Data.

In the next steps, we'll create two interactive charts in the classic designer dashboard that let the audience analyze the sales pipeline. The first will analyze the pipeline by account owner. The second will analyze it by stage. Both charts are based on an Opportunities lens, which contains a count of the number of opportunities and no groupings.

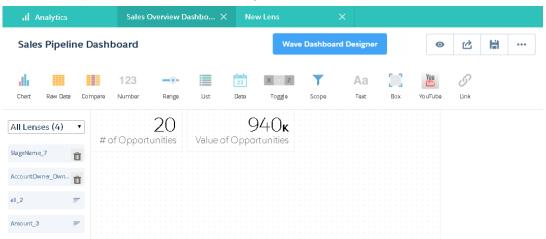
- Verify that the Sales Pipeline dashboard is open.
   You must have the dashboard open to clip lenses to it.
  - Note: If no dashboard is open, Analytics creates a dashboard.
- 2. From the home page, open the Opportunities lens.

**3.** Group the data by Account Owner.



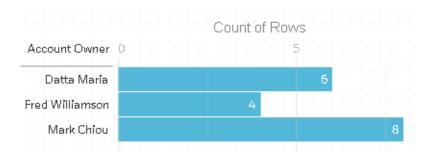
- **4.** Click **X** to clip the lens to the dashboard.
- **5.** Change the Account Owner grouping to a Stage Name grouping.

  To change a grouping, click the grouping and then select the new grouping.
- **6.** Clip the lens to the dashboard. Now that you have both lenses clipped to the dashboard, let's build charts based on them.
- **7.** View the Sales Pipeline dashboard in the classic designer.

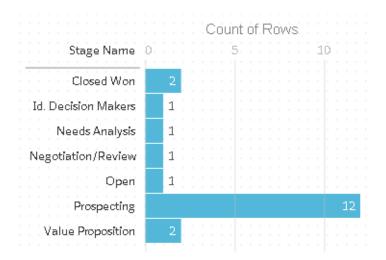


**8.** In the classic designer, click the chart widget, and then select the first clipped lens that contains number of opportunities grouped by account owner.

The chart shows of the results from the underlying query in the clipped lens.

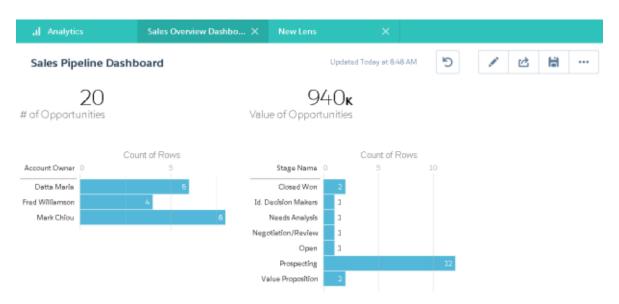


**9.** Create another chart based on the other clipped lens—the one grouped by stage name. The new chart widget shows how many opportunities are in each stage.



**10.** Click **o** to view the dashboard in presentation mode.

Now you're looking at the audience's view of your dashboard, and you're ready to ask some questions.



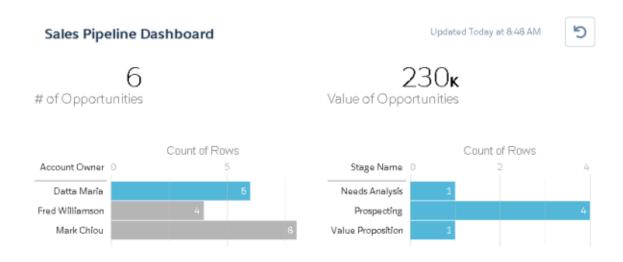
# Facet Widgets to See Data from Multiple Angles

Widgets that come from the same dataset are faceted by default. Faceting means that when you filter one widget, all the related widgets in the Analytics dashboard are filtered in the same way. You can turn faceting on or off for each widget.

Note: This topic covers how to facet widgets in a classic designer dashboard. For information about faceting in a dashboard designer dashboard, see Filter the Dashboard Results with Faceting.

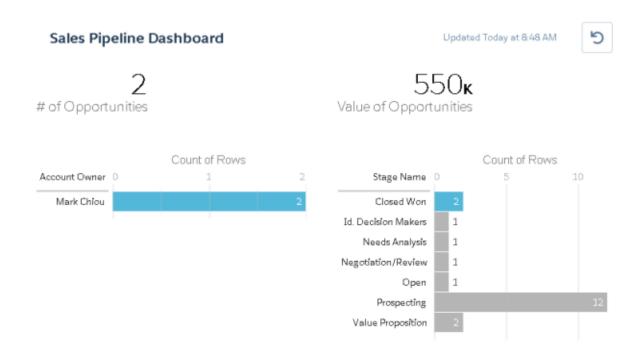
Let's look at how faceting works with the number and chart widgets that we added to our classic designer dashboard.

1. In the Sales Pipeline dashboard, click the first bar in the chart that shows the number of opportunities grouped by account owner. Notice that first bar is now highlighted and the results of the other widgets changed. Because of faceting, the number widgets and the other chart now show the results for the selected account owner only. Each of your widgets shows the same set of data from a different angle. Widgets created from the same dataset are faceted, by default.



- **2.** Click the first bar again to remove the filter based on the account owner. Notice that the results are now shown for all account owners.
- **3.** In the chart that shows the number of opportunities grouped by stage name, click the first bar.

  The Account Owners chart changes to show the values of the deals that each salesperson has in the selected stage. Because Mark is the only one that has deals in this stage, only he appears in the Account Owners chart.



**4.** To disable faceting for a particular widget, clear the **Facet this lens** option in the lens properties.

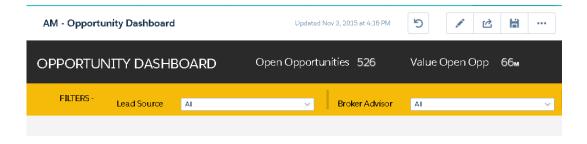


Tip: You can use bindings to facet widgets created from different datasets. For more information, see the Analytics Dashboard JSON Reference.

# Add Images to the Analytics Dashboard

Add images to your dashboard to help your audience with context and to make the dashboard more fun to read. For example, if your dashboard is designed to help track sales of multiple products, consider distinguishing the products by their logos.

- Note: This topic covers how to add an image widget using classic designer. For information about how to do this with dashboard designer, see Add an Image Widget to Display Graphics in the Dashboard.
- 1. Upload the image that you want to use to Documents and select the "Externally Available Image" option. If you don't select the option, the image will not appear in the dashboard.
- **2.** Copy the record ID for the document in the URL in the address bar.
- 3. In the dashboard, click the box widget and paste the record ID into the Image Document ID field in widget properties.
- Note: You can also use the box widget to shade a section of the dashboard or add a background color to the dashboard. For example, you can use colored areas to highlight key metrics and filters.



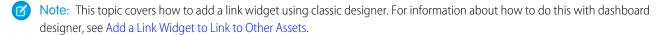
To do this, don't include an image and set the background color in the **Background Color** field of the widget properties.

SEE ALSO:

Uploading and Replacing Documents

## Link to Lenses and Other Dashboards

Use links to tie an Analytics dashboard to related lenses and dashboards. This widget is useful when you want to break up analysis across multiple assets, rather than cramming it all into a single dashboard. It's also useful for creating pathways to analyze your data.



- 1. In the dashboard, click the link icon.
- 2. In the widget properties, specify the link properties, such as the ones listed here.

#### **Destination Type**

Specify whether the link widget leads to a saved lens, saved dashboard, or new lens.

#### Destination

Specify the lens or dashboard asset to link to.



**Note:** If you try to create a Link widget in a dashboard that has not been saved in Spring '16 and you don't see the asset in the picklist, open the asset first, and then look for the asset in the picklist.

#### **Include Dashboard State**

When enabled, the selections made in widgets with faceted steps are transferred to the linked lens or dashboard. When transferring dashboard states, Analytics verifies that the destination has lenses that are compatible with the lenses from the source dashboard.



Note: Analytics doesn't transfer a dashboard state in the following cases.

- The source lens isn't faceted.
- The destination lens uses a different dataset than the source lens.
- When linking to another dashboard, the destination lens uses different groupings than the source lens. If the link destination is a lens, then groupings don't prevent dashboard state from being transferred.

#### Text

The link label that you click to access the linked asset.

# See Details About a Widget's Lens

To ensure that a widget in an Analytics dashboard is showing the right data, review details about the widget's lens.

1. When viewing a classic designer dashboard in presentation mode, not edit mode, hover over a widget and click 1.



Lens details display.

2. Review the dataset and applied dimensions, measures, filters, and other details about the widget's lens.

# Filter or Remove Clipped Lenses from the Analytics Dashboard

Curate the clipped lenses in a dashboard to reduce clutter. You can filter the list of clipped lenses to see which ones aren't used and then remove them from your dashboard. (This help topic applies to dashboards built in classic designer only.)

1. From the clipped lens menu, filter by All Lenses, Active Lenses, or Unused Lenses.



2. Optionally, if a lens isn't used, then you can remove it from your dashboard by clicking in.

If the lens is saved to Analytics, then it's still available and can be opened from Lenses after being removed from your dashboard.

# **Embed and Customize Analytics**

Extend Analytics everywhere throughout your business. The Analytics visualizations you've built are more powerful when you share them across your Salesforce experience by integrating them into custom pages, Visualforce pages, community sites, and more. In addition, custom menus in lenses and dashboards allow you to perform common Salesforce actions directly from Analytics.

### IN THIS SECTION:

### Embed Dashboards Everywhere

Embed Analytics dashboards in every Salesforce experience. From embedded dashboards, users can explore and click to linked assets. If you set them up with a Share icon, embedded dashboards offer Post to Feed and Download sharing options.

#### Add Actions to Analytics Lenses and Dashboards

Let users take action on insights directly from Analytics. Add actions to charts and tables in lenses and dashboards.

## Integrate Analytics into Salesforce with an Analytics Tab

Access your Analytics home and run Analytics apps from a tab within Salesforce Classic or Lightning Experience.

### Customize Analytics Dashboards using JSON

Configure advanced features in Analytics dashboards using JSON.

### Format Measures and Display Elements with Analytics Extended Metadata (XMD)

Set up your data and customize dashboard elements with Analytics Extended Metadata.

# **Embed Dashboards Everywhere**

Embed Analytics dashboards in every Salesforce experience. From embedded dashboards, users can explore and click to linked assets. If you set them up with a Share icon, embedded dashboards offer Post to Feed and Download sharing options.

Compare the options for embedding dashboards.

| User Interface                              | Where  | How  | Component   |
|---|--|--|---|
| Lightning Experience only                   | Home, record, and app home pages                         | Component in the Lightning App Builder   | Wave Dashboard<br>(wave:waveDashboard)                                |
| Salesforce Classic only                     | Record detail page                                       | Component in the enhanced page layout editor   | Wave Analytics Asset  |
| Lightning Experience and Salesforce Classic | Any page   | Visualforce page component   | wave:dashboard  |
| Salesforce App                              | Lightning app page or<br>Visualforce tab                 | Lightning app builder or Visualforce page component  | Wave Dashboard<br>(wave:waveDashboard) or<br>wave:dashboard           |
| Communities                                 | Customer Service<br>(Napili) page or<br>Visualforce page | Component in Community Builder or<br>Visualforce component on a Lightning<br>Platform community page | Wave Dashboard<br>(forceCommunity:waveDashboard)<br>or wave:dashboard |

Depending on the device and the embedding method, embedded Analytics dashboards can include these features.

- Sharing and downloading options
- Record actions menus
- Global filters
- Links to other Analytics dashboards
- Link to the native app , whether it's Analytics Studio on desktop or Analytics Mobile (available for Analytics users but not Community users)

Embedded Analytics dashboards have these limitations.

- The option to explore datasets in Analytics isn't included.
- The charts don't include hover-over information (tooltips).
- Some filters, such as date selectors, are difficult to set.

### IN THIS SECTION:

## Embed Analytics Dashboards in Lightning Pages

Add Analytics dashboard components to Lightning home pages, record pages, and app home pages to provide interactive visualizations of your data. Users can drill in and explore the dashboard within the frame on the Lightning page or in an Analytics window.

### Embed Analytics Dashboards in Salesforce Classic Pages

Add an Analytics dashboard to a detail page layout. On an account detail page, for example, you can include a dashboard of service issues associated with the account. Users can drill in, apply filters, and explore in the dashboard as if they were viewing it in an Analytics window.

### Add an Analytics Dashboard to a Visualforce Page

By embedding an Analytics dashboard into a Visualforce page, you can provide an interactive presentation of your data. Users can drill in and explore the dashboard within the frame on the Visualforce page or in a new window in Analytics.

### Whitelist Trusted Sites for Embedded Dashboards

Embed Analytics in any web page or web-based app. By specifying your trusted sites in the Analytics whitelist, you can include embedded Analytics dashboards in websites and apps outside of Salesforce servers.

### View Embedded Dashboards on Mobile Devices

Add Analytics dashboard components to Visualforce pages in Salesforce websites accessed by mobile users, including Communities. Or add Analytics dashboard components to Lightning app pages. Embedded Analytics dashboards can responsively select layouts optimized for any device—including phones and tablets.

### Share Analytics with Communities

With Analytics for Communities, external users can view apps shared with them via Analytics dashboards embedded in their community. You can embed dashboards using Community Builder or Visualforce pages.

## Embed Analytics Dashboards in Lightning Pages

Add Analytics dashboard components to Lightning home pages, record pages, and app home pages to provide interactive visualizations of your data. Users can drill in and explore the dashboard within the frame on the Lightning page or in an Analytics window.

To add a dashboard to your Lightning page, follow these steps.

- **1.** Go to the Lightning App Builder, click **New**, and follow the prompts to create a new Lightning page.
- 2. Select Wave Dashboard from the list of components.
- **3.** From the Dashboard dropdown list, select the dashboard to display.
  - Note: (For Developers) In the code, the dashboard name is represented with the dashboard ID. If configuring the component programmatically, you can use either the dashboardId attribute or the developerName attribute. The developerName can be requested through the API.
- **4.** From the layout drop-down list, select the type of screen where your Lightning page will be viewed.

## **EDITIONS**

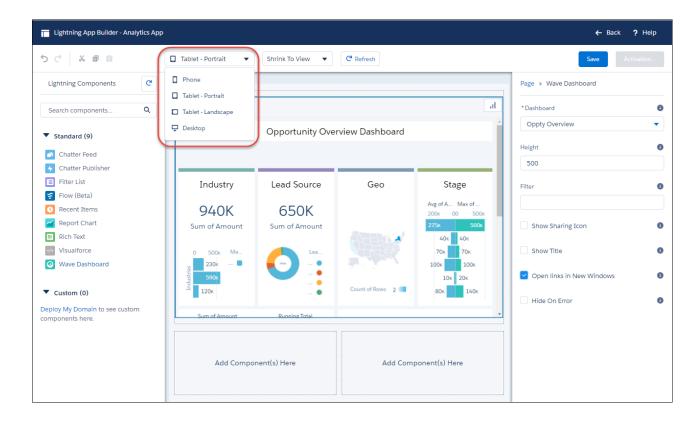
Available in: Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

## **USER PERMISSIONS**

To view embedded Analytics dashboards:

Analytics Platform permission set license with Use Analytics permission



- **5.** Configure the attributes of the embedded Analytics dashboard:
- The **Show Sharing Icon** option lets you include the Share icon on the dashboard. If the icon is present, users can click to open the Share dialog, where they can post to Chatter and download images and data. To show the Share icon, the minimum dashboard height is 612 pixels.
- The **Show Title** checkbox gives you control over the visibility of the dashboard title.
- The **Show Header** lets you control the visibility of the dashboard header. If selected, the dashboard is displayed with a header bar that includes the Open in Analytics icon, the date and time that the dashboard's data was updated, and the dashboard views menu. The header bar will also appear if either Show Sharing Icon or Show Title is selected.
- With the Open Links in New Windows attribute, you can specify where links from the dashboard to other assets are opened.
- The **Hide On Error** checkbox gives you control over whether the Analytics dashboard appears if there is an error (such as the dashboard can't be found).
- With the **Filter** attribute, you can set up the embedded dashboard to show only the data that's relevant for the record being viewed. The **Filter** attribute links data fields in the dashboard to the object's fields. For example, the filter here applies the name of the account on the record page as a filter so that the dashboard shows only information related to that account name:

```
{'datasets':{'account':[{'fields':['Name'], 'filter':{'operator': 'matches',
'values':['$Name']}}]}}
```

The example above shows a filter that causes the embedded dashboard to appear with only the filtered data showing. Here's an example that applies the account name as a selection within a dashboard that shows all of its data:

```
{'datasets' : {'account': [ {'fields': ['Name'], 'selection': ['$Name']}}}
```

Refer to the table to understand the notation for the **Filter** attribute.

Tip: This is a new syntax as of Spring '17. The previous syntax, noted here, is still supported.

| Notation  | Description   | Notes   |
|-----------|---|---|
| datasets  | Analytics dataset   | Where to find it: On the Analytics home page, select Edit on the dataset. The System Name is in the left panel of the edit page for the dataset. (If your org has namespaces, include the namespace prefix and two underscores before the dataset system name.)   |
| fields    | Dimension or Measure in the Analytics dataset   | Where to find it: Click the Explore icon to open the widget. Then select <b>Show SAQL</b> from the Options menu. For dimension names, look for "group by" statements. For measure names, look for statements with functions such as "sum" or "stddev."  |
| values    | Field in the Salesforce object, or a specific value   | Where to find it: In Setup, find the object you want, and select Fields. Use the <b>Field Name</b> (also known as the API Name). For custom fields, use the name with "c" at the end.   |
| selection | With the selection option, the dashboard is shown with all its data, and the specified dimension values are highlighted | The selection option can be used alone or with the filter option. Selection takes dimension values only. To use this option, the dashboard must include a list, date, or toggle widget that groups by the specified dimension. If a selection specifies a value that doesn't exist, or the dashboard doesn't include a list, date, or toggle widget that groups by the specified dimension, then the selection input is ignored and the dashboard appears with all its data and no selection. |
| filter    | With the filter option, the dashboard is shown with only filtered data  | The filter option can be used alone or with the selection option. Filter takes dimension or measure values.   |
| operator  | Use with the filter option  | Supported operators for dimensions: in, not in, matches Supported operators for measures: ==;!=; >= ; > ; <= ; <  |

Use this syntax for filtering on dimensions.

Use this syntax for filtering on measures.



**Note**: The above syntax is new in Spring '17. The previous syntax continues to be supported, and it works the same as the new selection option. For reference, here's the previous syntax:

```
{ 'datasetSystemName1': {'field1': ['$value1']}, 'datasetSystemName2': {'field1':
['$value1', '$value2'],'field2': ['$value3']} }
```

For example:

```
{'opportunity': {'AccountId': ['$Id']}}
```

For information about working with the Lightning App Builder, start on the Lightning App Builder overview page.

# Embed Analytics Dashboards in Salesforce Classic Pages

Add an Analytics dashboard to a detail page layout. On an account detail page, for example, you can include a dashboard of service issues associated with the account. Users can drill in, apply filters, and explore in the dashboard as if they were viewing it in an Analytics window.

# EDITIONS

Available in: Salesforce Classic (not available in all orgs)

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

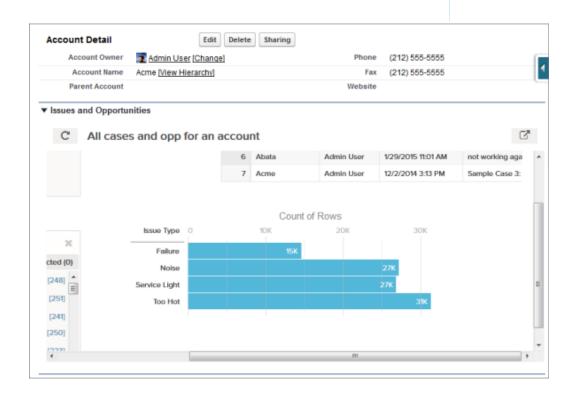
# **USER PERMISSIONS**

To customize page layouts:

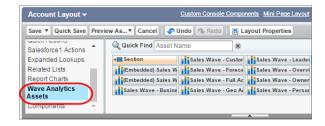
Customize Application

To view embedded Analytics dashboards:

 Analytics Platform permission set license with Use Analytics permission



1. In the enhanced page layout editor, select Wave Analytics Assets in the left column of the palette.

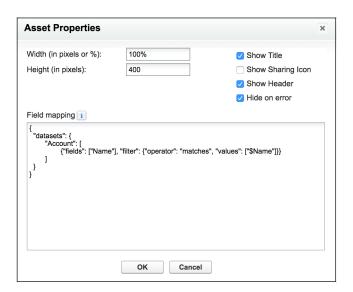


- 2. Drag an item from the list of available dashboards to a detail section on the page layout.
- **3.** After the dashboard is positioned in the layout, you can change properties such as height by double-clicking the element or clicking the wrench icon next to it ( ).

Additional properties of Analytics Assets:

- The Show Title checkbox gives you control over the visibility of the dashboard title.
- The Show Sharing Icon option lets you include the Share icon on the dashboard. If the icon is present, users can click to open the Share dialog, where they can post to Chatter and download images and data. To show the Share icon, the minimum dashboard height is 612 pixels.
- The Show Header option lets you control the visibility of the dashboard header. If selected, the dashboard is displayed with a header bar that includes the Open in Analytics icon, the date and time that the dashboard's data was updated, and the dashboard views menu. The header bar will also appear if either Show Sharing Icon or Show Title is selected.
- The Hide on error checkbox gives you control over whether the Analytics asset appears if there is an error (such as the dashboard can't be found).
- Dashboards include the date and time when they were last refreshed.

To set up the dashboard to show only the data that's relevant for the record being viewed, use field mapping. Field mapping links data fields in the dashboard to the object's fields. For example, the field mapping here applies the name of the account on the record page as a filter so that the dashboard shows only information related to that account name:



Refer to the table to understand the notation for adding the field mapping property.

17. The previous syntax, noted here, is still supported.

| Notation  | Description   | Notes   |
|-----------|---|---|
| datasets  | Analytics dataset   | Where to find it: On the Analytics home page, select Edit on the dataset. The System Name is in the left panel of the edit page for the dataset. (If your org has namespaces, include the namespace prefix and two underscores before the dataset system name.)   |
| fields    | Dimension or Measure in the Analytics dataset   | Where to find it: Click the Explore icon to open the widget. Then select <b>Show SAQL</b> from the Options menu. For dimension names, look for "group by" statements. For measure names, look for statements with functions such as "sum" or "stddev."  |
| values    | Field in the Salesforce object, or a specific value   | Where to find it: In Setup, find the object you want, and select Fields. Use the <b>Field Name</b> (also known as the API Name). For custom fields, use the name with "c" at the end.   |
| selection | With the selection option, the dashboard is shown with all its data, and the specified dimension values are highlighted | The selection option can be used alone or with the filter option. Selection takes dimension values only. To use this option, the dashboard must include a list, date, or toggle widget that groups by the specified dimension. If a selection specifies a value that doesn't exist, or the dashboard doesn't include a list, date, or toggle widget that groups by the specified dimension, then the selection input is ignored and the dashboard appears with all its data and no selection. |
| filter    | With the filter option, the dashboard is shown with only filtered data  | The filter option can be used alone or with the selection option. Filter takes dimension or measure values.   |
| operator  | Use with the filter option  | Supported operators for dimensions: in, not in, matches Supported operators for measures: ==;!=; >= ; > ; <= ; <  |

The field mapping follows this format:

```
"datasets": {
"dataset1": [
 {"fields": ["field1"],
  "selection": ["$selection1", "$selection2"],
  "filter": {"operator": "operator1", "values": [["$value1, $value2"], ["$value3",
"$value4"]]}
 },
             {"fields": ["field2", "field3"],
  "selection": ["$selection3", "$selection4"]
 }
],
"dataset2": [
 {"fields": ["field4"],
  "filter": {"operator": "operator2", "values": ["$value5"]}
 }
]
 }
```

```
3
```

Ø

**Note**: Use this syntax for filtering on dimensions.

```
"filter": {"operator": "operator1", "values": ["$value1"]}
```

Use this syntax for filtering on measures.

```
"filter": {"operator": "operator1", "values": [[value1]]}
```

For example, if the dashboard has a dataset named Service with the dimensions Account and Industry, this field mapping would show the dashboard with all its data but the record's account ID and industry would be highlighted:

With this field mapping, the dashboard would appear with just the record's account ID and industry data:

Here's another example with two datasets and a combination of selections and filters. This field mapping will show the dashboard with only data that is not in ExistingOpps but is in TX, AL, and DE, with revenue that is greater than or equal to 1000000. In addition, the dashboard will show Retail1, Wholesale1, and TX highlighted.

```
}
],
"Accounts": [
    {"fields": ["Revenue"],
        "selection": [],
        "filter": {"operator": ">=", "values": [[1000000]]}
    }
}
```

Note: The above syntax is new in Spring '17. The previous syntax continues to be supported, and it works the same as the new selection option. For reference, here's the previous syntax:

```
"dataset1": {
    "field1": ["$value1"]
},
    "dataset2": {
        "field2": ["$value2"],
        "field3": ["$value3"]
}
```

For example, if the dashboard shows data from a dataset named Service, with the dimensions Account and Industry, the field mapping would be defined like this:

```
"service": {
    "AccountId": ["$Id"],
    "Industry": ["$Industry"]
}
```

Be aware of these limits and limitations:

- You can add one dashboard per page layout.
- Analytics dashboards aren't supported in the original page layout editor. If you open and then save a layout with an Analytics dashboard in the original page layout editor, the dashboard is deleted.

For information about working with the enhanced page layout editor, see Customizing Page Layouts with the Enhanced Page Layout Editor.

## Add an Analytics Dashboard to a Visualforce Page

By embedding an Analytics dashboard into a Visualforce page, you can provide an interactive presentation of your data. Users can drill in and explore the dashboard within the frame on the Visualforce page or in a new window in Analytics.

To add a dashboard to your Visualforce page, configure the <wave:dashboard> component. You can add one dashboard per Visualforce page. However, the dashboard can include links to other dashboards or Analytics assets.

Here are two examples. Note that the dashboard is identified by the dashboardId, which is an 18-character code beginning with 0FK. You can find the dashboardId at the end of the URL when viewing a dashboard. An alternative way to identify the dashboard is by its developerName, which can be requested through the API.

## **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

## **USER PERMISSIONS**

To view embedded Analytics dashboards:

 Analytics Platform permission set license with Use Analytics permission OR Analytics for Communities permission set license with View Analytics on Communities pages permission

- The showTitle attribute gives you control over the visibility of the dashboard title.
- The showSharing attribute lets you include the Share icon on the dashboard. If the icon is present, users can click to open the Share dialog, where they can post to Chatter and download images and data. To show the Share icon, the minimum dashboard height is 612 pixels.
- The showHeader attribute lets you control the visibility of the dashboard header. If true, the dashboard is displayed with a header bar that includes the Open in Analytics icon, the date and time that the dashboard's data was updated, and the dashboard views menu. The header bar will also appear if either showSharing or showTitle is true.
- With the openLinksInNewWindow attribute, you can specify where links from the dashboard to other assets are opened.
- The hideOnError attribute gives you control over whether an Analytics asset appears if there is an error (such as the dashboard can't be found).
- The width attribute specifies the width of the dashboard, in pixels or percent. Pixel values are simply the number of pixels, for example, 500. Percentage values specify the width of the containing HTML element and must include the percent sign, for example, 20%. If the specified width is too large for the device, the maximum device width is used.
- With the filter attribute, you can either select or filter on dataset fields at run time. For example, this attribute can be used to set up the embedded dashboard to show only the data that's relevant for the record being viewed by linking data fields in the dashboard to an object's fields. Filters are configured with JSON strings.

Use this syntax for filtering on dimensions.

```
filter="{'datasets' : {'dataset1': [ {'fields': ['field1'], 'selection': ['!value1',
    '!value2']}, {'fields': ['field2'], 'filter': { 'operator': 'operator1', 'values':
    ['!value3', '!value4']}}]}}"
```

Use this syntax for filtering on measures.

```
filter="{'datasets' : {'dataset1': [ {'fields': ['field1'], 'selection': ['!value1',
    '!value2']}, {'fields': ['field2'], 'filter': { 'operator': 'operator1', 'values':
    [[value3]]}}]"
```

For example:

Refer to the table to understand the notation for the filter attribute.

17. The previous syntax, noted here, is still supported.

| Notation | Description   | Notes   |
|----------|---|---|
| datasets | Analytics dataset                                   | Where to find it: On the Analytics home page, select Edit on the dataset. The System Name is in the left panel of the edit page for the dataset. (If your org has namespaces, include the namespace prefix and two underscores before the dataset system name.) |
| fields   | Dimension or Measure in the Analytics dataset       | Where to find it: Click the Explore icon to open the widget. Then select <b>Show SAQL</b> from the Options menu. For dimension names, look for "group by" statements. For measure names, look for statements with functions such as "sum" or "stddev."          |
| values   | Field in the Salesforce object, or a specific value | Where to find it: In Setup, find the object you want, and select Fields. Use the <b>Field Name</b> (also known as the API Name). For custom fields, use the name with "c" at the end.   |

| Notation  | Description   | Notes   |
|-----------|---|---|
| selection | With the selection option, the dashboard is shown with all its data, and the specified dimension values are highlighted | The selection option can be used alone or with the filter option. Selection takes dimension values only. To use this option, the dashboard must include a list, date, or toggle widget that groups by the specified dimension. If a selection specifies a value that doesn't exist, or the dashboard doesn't include a list, date, or toggle widget that groups by the specified dimension, then the selection input is ignored and the dashboard appears with all its data and no selection. |
| filter    | With the filter option, the dashboard is shown with only filtered data  | The filter option can be used alone or with the selection option. Filter takes dimension or measure values.   |
| operator  | Use with the filter option  | Supported operators for dimensions: in, not in, matches Supported operators for measures: ==;!=; >= ; > ; <= ; <  |

- Mote: In Visualforce, values must have the format object.field.
- Note: To filter on a field that contains special characters, use Visualforce's JSENCODE function in the filter to replace special characters with encoded values.

For example, this syntax applies the name of the account in the Visualforce page as a selection on the dashboard:

```
filter="{'datasets': {'Account':[{'fields':['Name'], 'selection':['{!Account.Name}']}]}}"
```

This example syntax applies the name of the account in the Visualforce page as a filter so that the dashboard shows only the filtered data:

Note: The above syntax is new in Spring '17. The previous syntax continues to be supported, and it works the same as the new selection option. For reference, here's the previous syntax:

```
filter="{ 'datasetSystemName1': {'field1': ['!value1']}, 'datasetSystemName2': {'field1':
   ['!value1', '!value2'],'field2': ['!value3']} }"
```

For example:

```
filter="{'opportunity': {'Id': ['{!Opportunity.Id}']}}"
```

and

```
filter="{'ServiceCase4': {'Id': ['{!case.Id}'], 'OwnerId': ['{!case.OwnerId}'], 'Product__c': ['{!case.Product__c}'], 'Reason': ['{!case.Reason}']}}"
```

For more information about embedding Analytics, see the Visualforce Developer Guide Standard Component Reference.

### Whitelist Trusted Sites for Embedded Dashboards

Embed Analytics in any web page or web-based app. By specifying your trusted sites in the Analytics whitelist, you can include embedded Analytics dashboards in websites and apps outside of Salesforce servers.

First, add an Analytics dashboard component to your site, using Visualforce embedding, Lightning App Builder, or Lightning Out. This code sample shows how to add an Analytics dashboard component via Lightning Out.

```
$Lightning.use("wave:waveApp", function() {
    $Lightning.createComponent("wave:waveDashboard", {
        dashboardId: "0FKxx00000006bOGAQ"
    }, "app");
}, url, accessToken)
```

Second, set up a whitelist using the Content Security Policy (CSP). See Set Up a Whitelist of Trusted Sites for Embedded Analytics Dashboards.

The whitelist for embedded Analytics includes the following by default:

- \*.salesforce.com:\*
- \*.force.com:\*
- Your org's custom domain.

## View Embedded Dashboards on Mobile Devices

Add Analytics dashboard components to Visualforce pages in Salesforce websites accessed by mobile users, including Communities. Or add Analytics dashboard components to Lightning app pages. Embedded Analytics dashboards can responsively select layouts optimized for any device--including phones and tablets.

Dashboards built in the dashboard designer are responsive to any screen size. If you've created a tablet, phone, or custom layout in the dashboard designer, the dashboard automatically optimizes to fit your screen. For more information, see Generate Unique Analytics Dashboard Layouts for Different Devices.

When your dashboard has the right layouts, embed it via Visualforce or the Lightning app builder. Note that for the Salesforce app, only Lightning app pages are supported. See Lightning Pages for more information.



Note: Sharing actions aren't available for embedded dashboards on a phone.

## **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

### **USER PERMISSIONS**

To view Analytics:

Use Analytics

## **Share Analytics with Communities**

With Analytics for Communities, external users can view apps shared with them via Analytics dashboards embedded in their community. You can embed dashboards using Community Builder or Visualforce pages.



**Note:** Only users with a Customer Community Plus or Partner Community license can use this feature. This feature is supported in communities but not in portals.

Community users can view dashboards embedded in their community, and they can explore lenses, facets, and links in the embedded dashboards. Community users can't access the Analytics home page or create, update, or delete any Analytics asset. They also can't upload data. This table summarizes differences between internal Analytics users and external Community users.

|  | Analytics Users | Community Users |
|--|-----------------|-----------------|
| Access, Explore, and Facet Dashboards and Lenses         | . ✓             | <b>✓</b>        |
| Create, Update, and Delete Dashboards and Lenses         | ~               |                 |
| Share Dashboards and Lenses                              | ~               | ~               |
| Save Dashboard Views                                     | ~               | ~               |
| Access the Analytics Studio                              | ~               |                 |
| Access Analytics Prebuilt Apps                           | ~               |                 |
| Access Analytics from Mobile Devices                     | ~               |                 |
| Analyze Large Datasets                                   | ~               | ~               |
| Benefit from Security Predicates                         | ~               | ~               |
| Set and Track Notifications                              | ~               |                 |
| Annotate Dashboard Widgets                               | ~               | ~               |
| Open Salesforce Records                                  | ~               |                 |
| Perform Record-level Actions from<br>Custom Action Menus | ~               |                 |
| Perform Bulk Actions from Customized<br>Widget Menus     | ~               |                 |

# **EDITIONS**

Available in: Salesforce Classic and Lightning Experience.

Available for an extra cost in: **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in: **Developer** Edition.

## **USER PERMISSIONS**

To create, customize, or activate a community:

 Create and Set Up Communities

AND is a member of the community they're trying to update

To modify Analytics settings:

 Analytics Platform permission set license with Manage Analytics permission

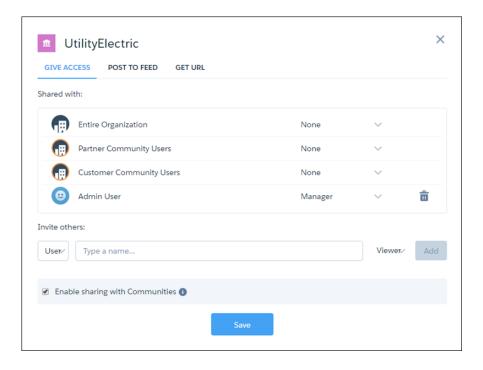
To view, explore, and share embedded Analytics dashboards for users with a Community license:

 Analytics for Communities permission set license with View Analytics on Communities pages permission

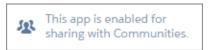
Here are the high-level steps for setting up Analytics for Communities.

- 1. Enable Analytics for Communities and set up community members. See Enable Analytics for Communities.
- 2. Create Analytics dashboards and save them in an Analytics app that you can share with your community.
- **3.** Embed your Analytics dashboards using either Community Builder or Visualforce.
  - Note: The Analytics Dashboard component in Community Builder is available only in the Customer Service (Napili) template.

- 4. From the Analytics app containing your dashboards, select **Share**.
- 5. In the Share dialog, select **Enable sharing with Communities**.



When an app is enabled for sharing with external users, a message appears to let you know at a glance. You can easily check and change the sharing status of apps.



- **6.** Invite community partners and customers to share the app by entering their names and clicking **Add**. Community members in the sharing list are highlighted in orange to distinguish them as external users, and Viewer is the only access available for them.
- Note: Security is enforced at these levels.
  - By role, group, or user, via the Sharing dialog.
  - At the Analytics app level, via the Enable sharing with Communities checkbox.
  - At the org setup level, via security predicates.
- Note: Access to the Analytics REST API is limited to the GET method with these endpoints:
  - /wave/folders/<folder ID> (Access to folders shared with the community)
  - /wave/dashboards/<dashboard ID or API Name> (Access to dashboards belonging to a folder shared with the community)
  - /wave/lenses/<lens ID or API Name> (Access to lenses belonging to a folder shared with the community)
  - /wave/datasets/<dataset ID> (Access to datasets belonging to a folder shared with the community)

#### IN THIS SECTION:

### Use Community Builder to Embed Analytics Dashboards in Communities

Add Analytics via the Wave Dashboard component available in the Customer Service (Napili) template.

### Use Visualforce to Embed Analytics Dashboards in Communities

Share Analytics with external users via Analytics dashboards embedded in their community.

### Collaborate on Analytics Dashboards in Communities with Annotations

Foster an environment of open communication sparked by Analytics dashboards embedded in communities. With annotations, partners and customers can converse in Chatter feeds on individual dashboard widgets. Annotations are available whether dashboards are embedded via Visualforce or the Community Builder.

### Use Community Builder to Embed Analytics Dashboards in Communities

Add Analytics via the Wave Dashboard component available in the Customer Service (Napili) template.



**Note:** The **Wave Dashboard** component in Community Builder is available only in the Customer Service (Napili) template.

To add Analytics to your community, follow the high-level steps in Share Analytics with Communities. When you're ready to embed a dashboard, use the following procedure.

1. Select the Wave Dashboard component in Community Builder.

# **EDITIONS**

Available in: Salesforce Classic and Lightning Experience.

Available for an extra cost in: **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in: **Developer** Edition.

## **USER PERMISSIONS**

To create, customize, or activate a community:

 Create and Set Up Communities

AND is a member of the community they're trying to update

To modify Analytics settings:

 Analytics Platform permission set license with Manage Analytics permission

To view, explore, and share embedded Analytics dashboards for users with a Community license:

 Analytics for Communities permission set license with View Analytics on Communities pages permission



- 2. From the Dashboard dropdown list, select the dashboard to display.
  - Note: (For Developers) In the code, the dashboard name is represented with the dashboard ID. If configuring the component programmatically, you can use either the dashboardId attribute or the developerName attribute. The developerName can be requested through the API.
- 3. Configure the attributes of the embedded Analytics dashboard.
- **Height**—Specify the height of the dashboard, in pixels. The default is 300.
- **Show Sharing Icon**—Add the Share icon on the dashboard. Users can click the icon to open the Share dialog, where they can post to Chatter and download images and data. To show the Share icon, the minimum dashboard height is 612 pixels.
- **Show Title**—Control the visibility of the dashboard title.
- **Show Header**—Control the visibility of the dashboard header. If selected, the dashboard is displayed with a header bar that includes the Open in Analytics icon, the date and time that the dashboard's data was updated, and the dashboard views menu. The header bar will also appear if either Show Sharing Icon or Show Title is selected.
- Open Links in New Windows—Specify where links from the dashboard to other assets are opened.
- **Hide On Error** Control whether the Analytics dashboard appears if there is an error, such as the dashboard can't be found.
- **Filter**—Configure the embedded dashboard to show only the data that's relevant for the record being viewed. The **Filter** attribute links data fields in the dashboard to the object's fields. In this example, the dashboard is filtered by the account name on the record page and shows only data related to that account name.

```
{'datasets':{'account':[{'fields':['Name'], 'filter':{'operator': 'matches',
'values':['$Name']}}]}}
```

This example applies the account name as a selection. With the selection option, the dashboard displays all its data, and the specified values are highlighted.

```
{'datasets' : {'account': [ {'fields': ['Name'], 'selection': ['$Name']}}}
```

Refer to the table to understand the notation for the Filter attribute.

| Notation  | Description   | Notes   |
|-----------|---|---|
| datasets  | Analytics dataset   | Where to find it: On the Analytics home page, select Edit on the dataset. The System Name is in the left panel of the edit page for the dataset. (If your org has namespaces, include the namespace prefix and two underscores before the dataset system name.)   |
| fields    | Dimension or Measure in the<br>Analytics dataset  | Where to find it: Click the Explore icon to open the widget. Then select <b>Show SAQL</b> from the Options menu. For dimension names, look for "group by" statements. For measure names, look for statements with functions such as "sum" or "stddev."  |
| values    | Field in the Salesforce object, or a specific value   | Where to find it: In Setup, find the object you want, and select Fields. Use the <b>Field Name</b> (also known as the API Name). For custom fields, use the name with "c" at the end.   |
| selection | With the selection option, the dashboard is shown with all its data, and the specified dimension values are highlighted | The selection option can be used alone or with the filter option. Selection takes dimension values only. To use this option, the dashboard must include a list, date, or toggle widget that groups by the specified dimension. If a selection specifies a value that doesn't exist, or the dashboard doesn't include a list, date, or toggle widget that groups by the specified dimension, then the selection input is ignored and the dashboard appears with all its data and no selection. |
| filter    | With the filter option, the dashboard is shown with only filtered data  | The filter option can be used alone or with the selection option. Filter takes dimension or measure values.   |
| operator  | Use with the filter option  | Supported operators for dimensions: in, not in, matches Supported operators for measures: ==;!=; >= ; > ; <= ; <  |

Use this syntax for filtering on dimensions.

Use this syntax for filtering on measures.

For information about working with Community Builder, start with Customize Communities with Community Builder.

# Use Visualforce to Embed Analytics Dashboards in Communities

Share Analytics with external users via Analytics dashboards embedded in their community.

- 1. To add Analytics to your community, follow the high-level steps in Share Analytics with Communities.
- **2.** Select the Visualforce page where you'll embed Analytics, or create a new page. See Defining Visualforce Pages.
- **3.** Optionally, you can add your page to a Visualforce tab. For more information, refer to Create Visualforce Tabs.
- **4.** When you're ready to embed a dashboard, see Add an Analytics Dashboard to a Visualforce Page.

# **EDITIONS**

Available in: Salesforce Classic and Lightning Experience.

Available for an extra cost in: **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in: **Developer** Edition.

# **USER PERMISSIONS**

To create, customize, or activate a community:

 Create and Set Up Communities

AND is a member of the community they're trying to update

To modify Analytics settings:

Analytics Platform
 permission set license
 with Manage Analytics
 permission

To view, explore, and share embedded Analytics dashboards for users with a Community license:

 Analytics for Communities permission set license with View Analytics on Communities pages permission

## Collaborate on Analytics Dashboards in Communities with Annotations

Foster an environment of open communication sparked by Analytics dashboards embedded in communities. With annotations, partners and customers can converse in Chatter feeds on individual dashboard widgets. Annotations are available whether dashboards are embedded via Visualforce or the Community Builder.



**Note**: This feature is supported in communities, but not in portals, for users with a Customer Community Plus or Partner Community license.

If you don't already have Analytics for Communities, see Share Analytics with Communities. To set up annotations, verify that Chatter is enabled for your community users. Also, enable feed tracking on Analytics Assets. (For more information, see Enable Annotations on Dashboard Widgets.)

To create annotations, click to open your embedded dashboard in Analytics. Then select **Annotate** from the dropdown menu on a widget.

## **EDITIONS**

Available in: Salesforce Classic and Lightning Experience.

Available for an extra cost in: **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in: **Developer** Edition.

## **USER PERMISSIONS**

To create, customize, or activate a community:

 Create and Set Up Communities

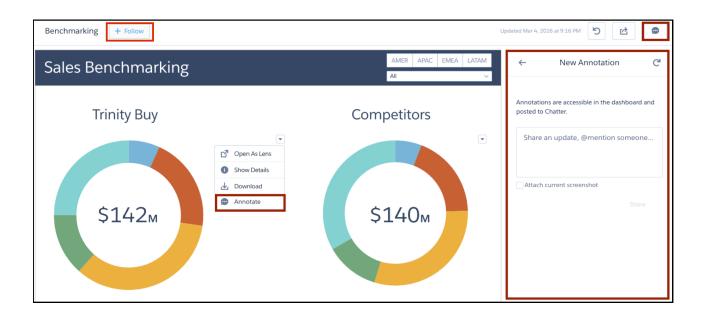
AND is a member of the community they're trying to update

To modify Analytics settings:

Analytics Platform
 permission set license
 with Manage Analytics
 permission

To view, explore, and share embedded Analytics dashboards for users with a Community license:

 Analytics for Communities permission set license with View Analytics on Communities pages permission



In the annotations panel, you can type messages and @mention people in your org who have access to the dashboard. You can also share screenshots of the current state of the dashboard. Analytics dashboard annotations are natively integrated with Chatter, and comments on dashboards also appear as Chatter posts. If users click the **Follow** button, they see all comments on the dashboard. From Chatter, they can click the dashboard image to navigate directly to the annotation on the dashboard in Analytics, where they can add to the conversation. For more information, see Collaborate with Dashboard Annotations.

The visibility of posts depends on the type of user that makes the original post. For security, external community users can't see annotations originated by your org's internal users (unless the external user is @mentioned). But if an internal user replies on an annotation started by an external user, then all users can see all posts. For more information, see the visibility property in the Chatter REST API Developer Guide.

# Add Actions to Analytics Lenses and Dashboards

Let users take action on insights directly from Analytics. Add actions to charts and tables in lenses and dashboards.

You can add object-specific actions and global actions that you previously defined on Salesforce objects. You can let dashboard viewers invoke these actions directly from Analytics to create, update, and interact with Salesforce records. For example, you can add actions that let users create cases, update accounts, and post to Chatter.

## IN THIS SECTION:

#### Perform Actions on a Salesforce Record from Analytics

As you gain insights into your business from Analytics, you sometimes have to perform actions on an underlying Salesforce record. No need to exit Analytics. You can invoke a Salesforce action on the record directly from Analytics. You can also open web pages, such as search the web for the company name listed in an Analytics lens or dashboard.

#### Perform Bulk Actions on Multiple Salesforce Records from Analytics

Sometimes, you need to perform the same action on a group of records. With Analytics bulk actions, you can perform an action on all records shown in a table in Analytics.

# Perform Actions on a Salesforce Record from Analytics

As you gain insights into your business from Analytics, you sometimes have to perform actions on an underlying Salesforce record. No need to exit Analytics. You can invoke a Salesforce action on the record directly from Analytics. You can also open web pages, such as search the web for the company name listed in an Analytics lens or dashboard.

You can add an action menu to any dataset field, except a measure. These actions appear in Analytics chart legends and table cells.

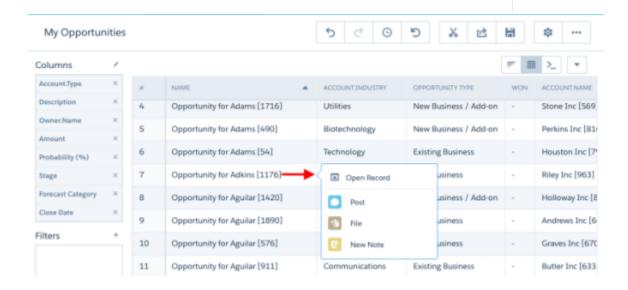
# USER PERMISSIONS

To edit a dataset:

Edit Analytics Dataflows

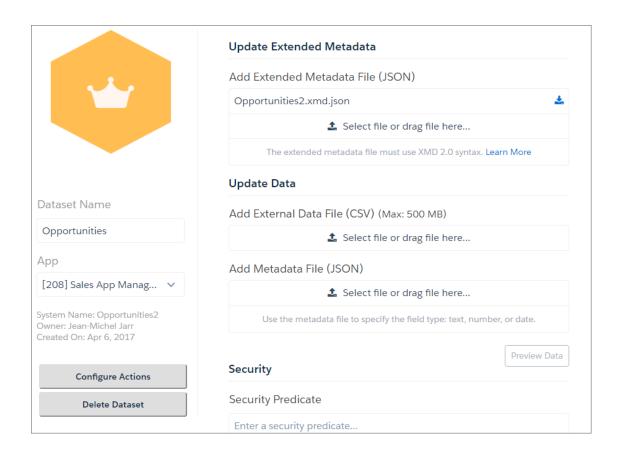
To create actions:

Customize Application



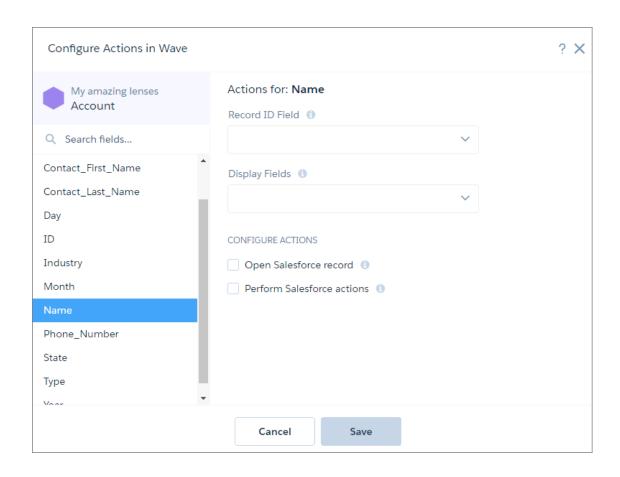
Analytics supports all object and global actions defined in Salesforce, except actions assigned to a page layout for the User object. Analytics doesn't support Lightning component actions.

1. Edit the dataset.

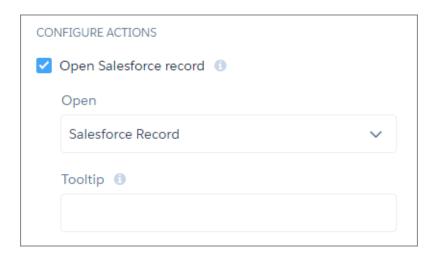


## **2.** Click **Configure Actions**.

**3.** In the left pane, select the dataset field where you want the action menu to appear.



- **4.** In the Record ID Field, select the dataset field that contains the record ID of the object that you want to perform the action on. For instance, if the dataset has Opportunity ID and Account ID fields, select Account ID to perform actions on the account records. Analytics uses the ID to identify the Salesforce object and record to perform the action on.
- **5.** In Display Fields, choose which dataset fields to show users. An action can apply to multiple Salesforce records. Specifying the dataset fields narrows the choices and helps users pick the correct record to perform the action on.
  - For example, if you enable actions on opportunity records, you can show the opportunity name, account name, and opportunity owner name to help users pick the right opportunity.
- **6.** To let users open a Salesforce record or URL, select **Open Salesforce record**, choose the action in the Open field, and then enter a tooltip. Users see the tooltip when they hover over the action in an Analytics lens or dashboard.

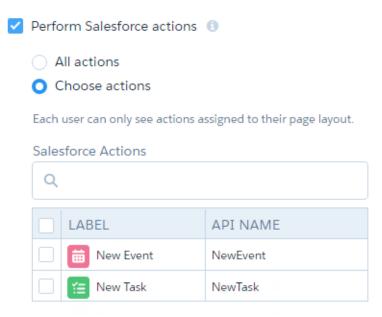


Choose one of the following actions.

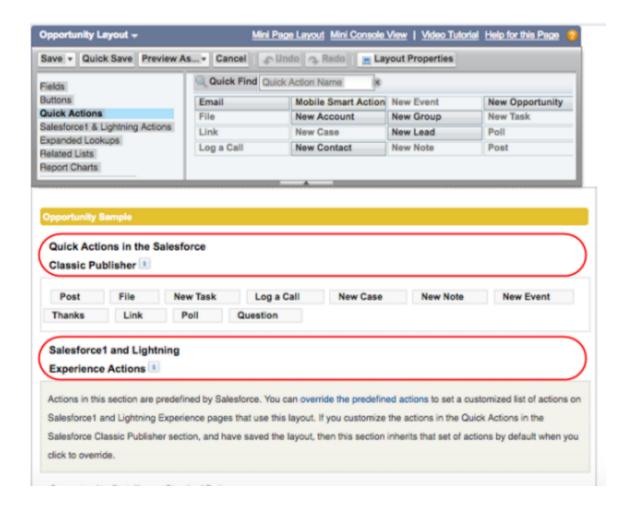
| Action                            | Description   |  |  |
|-----------------------------------|---|--|--|
| Salesforce Record                 | Opens the Salesforce record. Analytics searches for the record in the same org in which it's running.   |  |  |
| Salesforce Record (Multiple Orgs) | Opens the Salesforce record from another org. If the dataset contains records from multiple orgs, select this option. In the Org ID Field, select the dataset field that contains the org ID. To enable Analytics to connect to each org, select <b>Manage Orgs</b> and specify the URL for each org. |  |  |
| URL                               | Opens a URL.  Use the following syntax to pass a dataset field as a parameter in the URL:   |  |  |
|                                   | {{row. <dataset_field_dev_name>}}</dataset_field_dev_name>  |  |  |
|                                   | For example,  http://www.google.com?q={ {row.AccountName} }  If you don't specify the URL, Analytics uses the org's URL. For example, you can specify the following parameter to open the Account record in Salesforce:   |  |  |
|                                   | /{{row.AccountId}}  |  |  |
|                                   | Analytics retrieves the Account ID from the Accountld field in the dataset record.  |  |  |

7. To enable users to perform actions on a Salesforce record, select **Perform Salesforce actions** and then choose the actions. The list of actions varies based on the object identified by the Record ID Field.

| Option         | Description  |  |  |
|----------------|--|--|--|
| All actions    | Adds all actions defined in the page layout for this object, including new ones created later.   |  |  |
| Choose actions | Select from the list of currently available actions.  Note: The list contains a superset of all actions defined in all page layouts for the Salesforce object. |  |  |



Note: An Analytics user sees only the actions that you select and that are assigned to their page layout. If the predefined actions are overridden for the Salesforce mobile app and Lightning Experience in a page layout, Analytics displays only the actions that are added to both the Quick Actions in the Salesforce Classic Publisher and the Salesforce Mobile and Lightning Experience Actions sections of the layout.



#### 8. Click Save.

#### IN THIS SECTION:

#### Record Actions Example

Each week, opportunity owners analyze their opportunities using an Analytics dashboard. Sometimes, they must update an opportunity. To help them perform the update without going back and forth between Analytics and Sales Cloud, you decide to set up Analytics actions. To let Analytics dashboard viewers update an opportunity record from Analytics, you add the Update Opportunity action to the Opportunity Name field in an Analytics dataset. The first step is to set up the action in Salesforce and then add the action to the Analytics dataset field.

### **Record Actions Example**

Each week, opportunity owners analyze their opportunities using an Analytics dashboard. Sometimes, they must update an opportunity. To help them perform the update without going back and forth between Analytics and Sales Cloud, you decide to set up Analytics actions. To let Analytics dashboard viewers update an opportunity record from Analytics, you add the Update Opportunity action to the Opportunity Name field in an Analytics dataset. The first step is to set up the action in Salesforce and then add the action to the Analytics dataset field.

To implement this record-level action, perform the following tasks.

#### IN THIS SECTION:

1. Create the Salesforce Action and Add It to an Object

This example adds the predefined Update a Record action to the Opportunities object.

2. Apply the Action to the Object's Page Layout

Add the action to the page layout for the object. Users whose profiles are assigned to that layout can see the action in Salesforce. Page layouts control the layout and organization of content, including custom actions, on record detail pages. Each record detail page can have multiple page layouts to give different users a unique experience.

3. Add the Action to the Analytics Dataset Field

When you add the Update Opportunity action to the Opportunity Name field in the Opportunities dataset, you specify which dimension shows the action menu. You also specify the dataset field that contains the Salesforce record ID. The ID identifies both the Salesforce object and the record.

## Create the Salesforce Action and Add It to an Object

This example adds the predefined Update a Record action to the Opportunities object.

- 1. In Setup, in the Quick Find box, enter the name of the object that you want to add actions to. For this example, enter *Opportunities*, then select **Buttons**, **Links**, **and Actions**.
- 2. Click **New Action** to see which types of actions are available.
- **3.** From the Action Type dropdown list, select the action to add. In this case, select **Update a Record**.
- **4.** Enter a label and description for the action.

# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

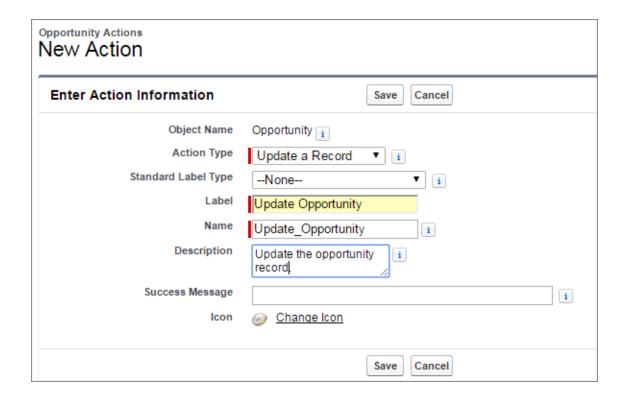
# **USER PERMISSIONS**

To view visualizations:

Use Analytics

To create actions:

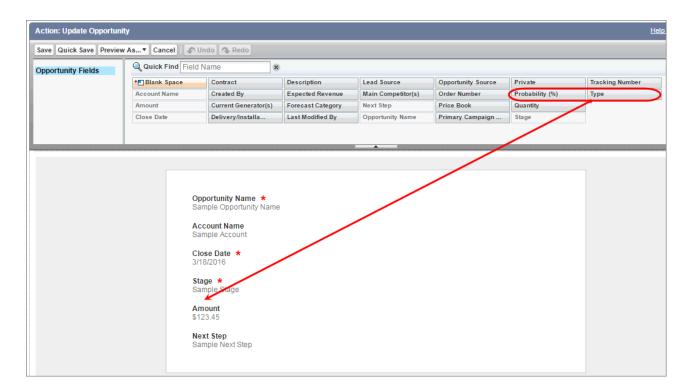
Customize Application



#### 5. Click Save.

The next page shows the default fields that you can update. For the example, add the **Probability (%)** and **Type** fields.

**6.** Drag **Probability (%)** and **Type** below the Stage field in the workspace. To select multiple fields, hold down **Ctrl** (for Windows) or **Cmd** (for macOS).



#### 7. Click Save.

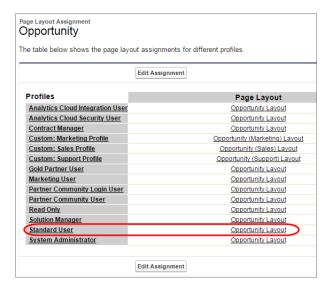
You added the Update Opportunity action to the Opportunities object. Next, you add it to a page layout to determine which users can see the action.

Apply the Action to the Object's Page Layout

Add the action to the page layout for the object. Users whose profiles are assigned to that layout can see the action in Salesforce. Page layouts control the layout and organization of content, including custom actions, on record detail pages. Each record detail page can have multiple page layouts to give different users a unique experience.

In this example, you add the Update Opportunity action to the opportunity page layout that's assigned to the Standard User profile. You can use these same techniques to add actions to any Salesforce page layout and user profile.

- 1. Go to Setup in Salesforce, and enter the name of the object in the Quick Find box. For the example, enter *Opportunities*. Then select **Page Layouts** to see what's available.
- 2. If multiple page layouts are defined for the object, click **Page Layout Assignment** to see which page layout is assigned to each user profile.



# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To view visualizations:

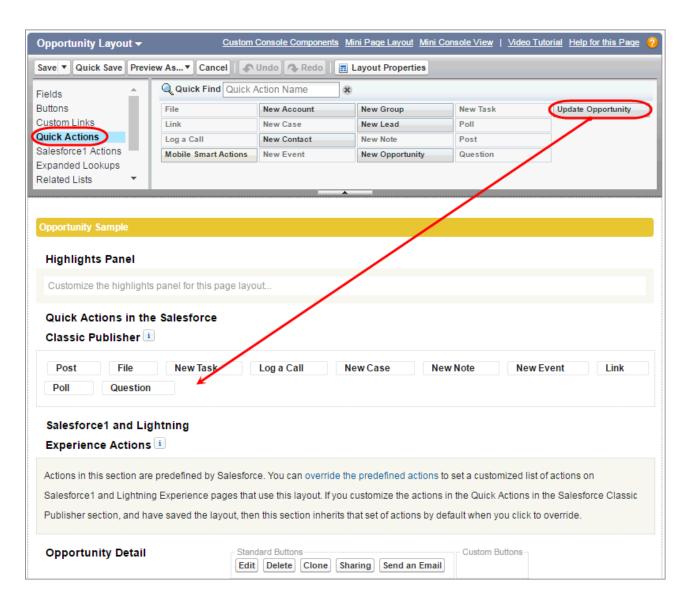
Use Analytics

To create actions:

Customize Application

- 3. Edit the page layout assigned to the profile for the users for whom you want to access the action.

  For this example, edit the Opportunity Layout, which is assigned to the Standard User profile. Users who are assigned the other opportunity page layouts can't see this custom action, unless you apply the action to those page layouts.
- **4.** To open the layout, click the **Opportunity Layout** link next to a profile. It doesn't matter which profile.
- **5.** In the palette, click **Quick Actions** to select the actions to add to the layout. The available actions appear to the right.
- 6. Drag the **Update Opportunity** custom action to the existing actions in the Quick Actions in the Salesforce Classic Publisher section.

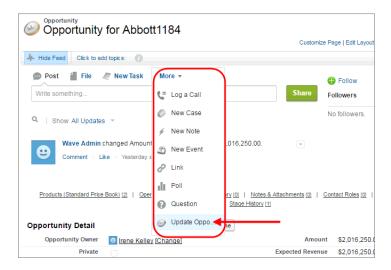


**7.** If the predefined actions are overridden in the Salesforce app and Lightning Experience Actions section, you must also drag the action to that section.

If the predefined actions are overridden, Analytics shows only the actions that appear in both the Quick Actions in the Salesforce Classic Publisher and Mobile & Lightning Actions sections.

### 8. Click Save.

This action is now available on the Opportunity details page for all users assigned the Opportunity Layout.

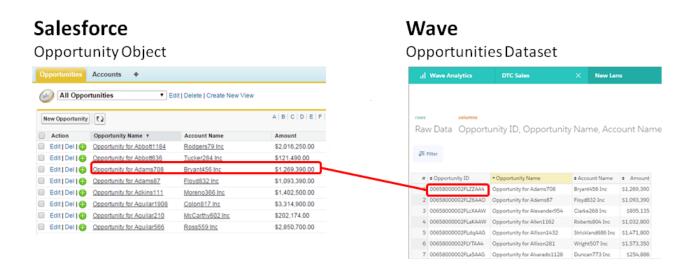


Ø

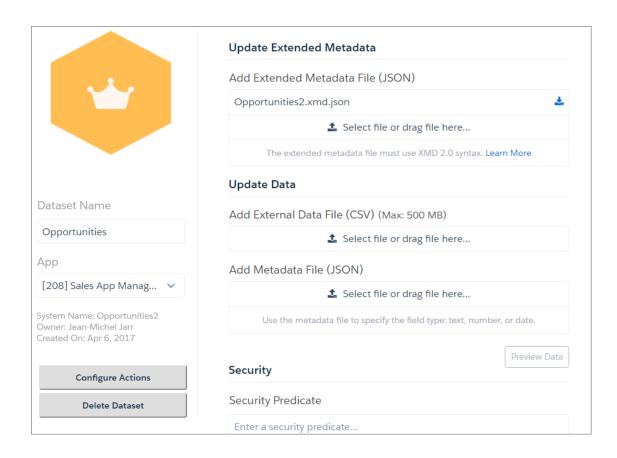
Note: If a page layout is based on a record type that certain users can't access, actions for that type aren't available to them.

### Add the Action to the Analytics Dataset Field

When you add the Update Opportunity action to the Opportunity Name field in the Opportunities dataset, you specify which dimension shows the action menu. You also specify the dataset field that contains the Salesforce record ID. The ID identifies both the Salesforce object and the record.

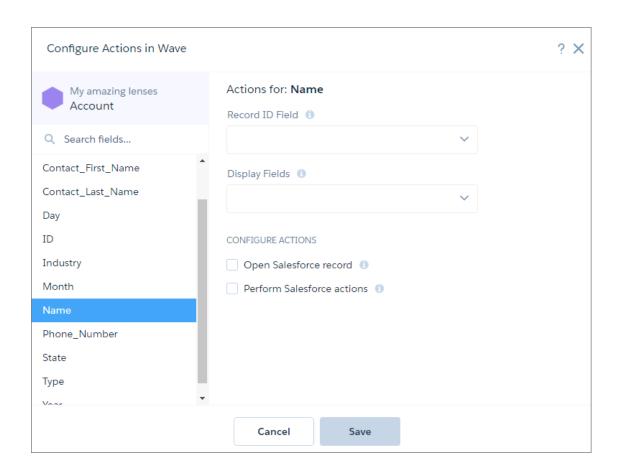


1. Edit the dataset.

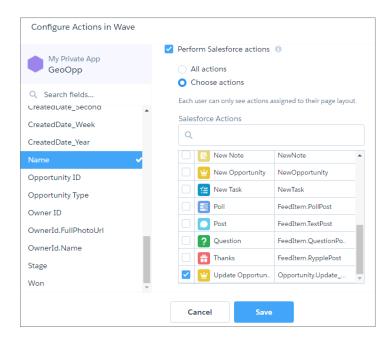


## **2.** Click **Configure Actions**.

**3.** In the left pane, select the dataset field where you want the action menu to appear.



- 4. In the Record ID Field, select **Opportunity Id**, which is the dataset field that contains the record ID of the Opportunity object.
- **5.** In Display Fields, select the dataset fields to show if multiple records match the action. Users can review this information to determine which Salesforce record to perform the action on. To help users identify the correct opportunity record, show Opportunity ID, Opportunity Name, Opportunity Owner, and Account Name.
- 6. To enable users to perform actions on a Salesforce record, select **Perform Salesforce actions** and then select **Choose actions**.
- 7. Select Update Opportunity.



#### 8. Click Save.

# Perform Bulk Actions on Multiple Salesforce Records from Analytics

Sometimes, you need to perform the same action on a group of records. With Analytics bulk actions, you can perform an action on all records shown in a table in Analytics.

You define the bulk action in a Visualforce page. The Visualforce page can make calls to Apex methods. You can also configure the Visualforce page to display the results of the action or show an interactive form. For example, you can create a form that allows the dashboard viewer to change the account owner of each opportunity shown in the table widget.

Before we get into the details about how to create a bulk action, review the following high-level process.

- 1. Analytics passes the SAQL query used to populate the table widget to the Visualforce page.
  - Note: The SAQL query that Analytics passes usually contains a limit. To return more results, modify the limit statement in the SAQL query.
- 2. You write custom Visualforce and, if needed, Apex code to extract the SAQL guery.
  - Tip: When issuing an Analytics API request for the SAQL query, if most of your logic is in Javascript on the client side, then you should use AJAX from Javascript. If most of your logic is in Apex, then use HTTP from your Apex class.
- 3. Your code executes the SAQL query against the Analytics Query API.
- **4.** The Analytics API returns the results of the query—dataset rows—to the Visualforce page.
- **5.** You write more custom code that performs actions on the returned dataset rows. For example, you can perform a bulk edit, bulk create, or integrate with third party.
- Note: Bulk actions only work on steps that query datasets. If the table widget is built on a step with type static or soq1, the action doesn't work.

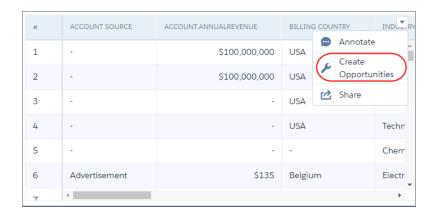
### IN THIS SECTION:

#### **Bulk Actions Example**

You want to add the "Create Opportunities" option in a table widget's action menu. This action must create an opportunity for each account shown in a table widget.

## **Bulk Actions Example**

You want to add the "Create Opportunities" option in a table widget's action menu. This action must create an opportunity for each account shown in a table widget.



Note: This widget-level action menu is different from the record-level action menu that you can access from a record.

To keep the user informed of what is happening, the action must also display a Visualforce page that shows the progress of the following tasks.

1. The Visualforce page retrieves a list of accounts from the SAQL query used to populate the table widget. If the table widget's results were previously filtered because of selections in other dashboard widgets, only the filtered records are returned.



2. The Visualforce page creates an opportunity for each retrieved account.

| Creating Opportunities |             |  |
|------------------------|-------------|--|
| Account                | Opportunity |  |
| Open Source Inc.       | Creating    |  |
| Missoula & Sons Inc.   | Creating    |  |
| Open Source Inc.       | Creating    |  |
| Missoula & Sons Inc.   | Creating    |  |

**3.** The Visualforce page shows the opportunity created for each account.

| Opportunities Created |                           |  |
|-----------------------|---------------------------|--|
| Account               | Opportunity               |  |
| Open Source Inc.      | From Open Source Inc.     |  |
| Missoula & Sons Inc.  | From Missoula & Sons Inc. |  |
| Open Source Inc.      | From Open Source Inc.     |  |
| Missoula & Sons Inc.  | From Missoula & Sons Inc. |  |

To implement this bulk action, perform the following tasks.

#### IN THIS SECTION:

1. Define Action Behavior with Apex Controller Class and Methods

Define an Apex controller class and methods that generate a list of accounts shown in the table widget, create an opportunity for each account, and return the progress of each task.

2. Create a Visualforce Page That Executes the Action

The Visualforce page calls the methods defined in the Apex controller class to invoke the action and provide a status on the tasks.

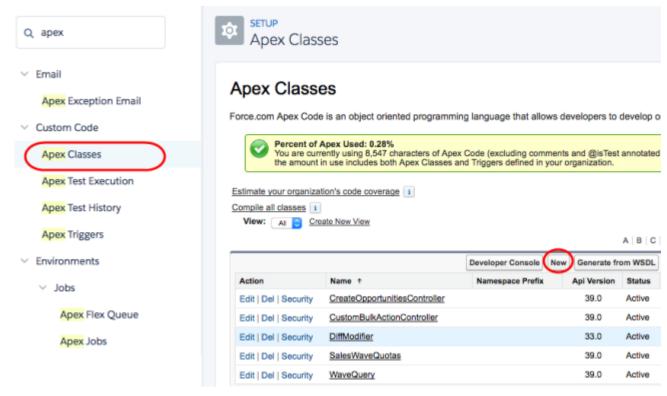
3. Assign Bulk Action to Table Widget

Configure the table widget properties to expose the bulk action defined in the Visualforce page.

Define Action Behavior with Apex Controller Class and Methods

Define an Apex controller class and methods that generate a list of accounts shown in the table widget, create an opportunity for each account, and return the progress of each task.

- 1. From setup, enter Apex Classes in the Quick Find box.
- 2. Select Apex Classes.
- 3. Click New.



#### **4.** Add the following code.

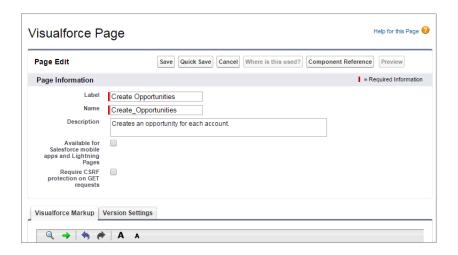
```
public class CreateOpportunitiesController {
    public string query{get; set;}
^{\prime\star} To determine the records to perform the bulk action on, extract the SAQL query ^{\star\prime}
    public PageReference init() {
        query = ApexPages.currentPage().getParameters().get('query');
        return null;
    }
^{\prime} Takes the account records from the SAQL query, creates an opportunity for each account,
and then returns a map between account ID and new opportunity name. Note: Account.Name
 and AccountId referenced below refer to the dataset field names. Update them to match
 your dataset fields. */
    @RemoteAction
   public static Map<String, String> create(List <Map<String, String>> accountRecords)
 {
        Map<String, String> result = new Map<String, String>();
        List<Opportunity> opps = new List<Opportunity>();
        for (Map<String, String> accountRecord : accountRecords) {
           String name = accountRecord.get('Account.Name') + ' - Sprint Review - 12/2';
            String accountId = accountRecord.get('AccountId');
            result.put(accountId, name);
            Opportunity opp = new Opportunity(
/* You can set different fields from the Opportunity object than those listed below,
```

#### 5. Click Save.

Create a Visualforce Page That Executes the Action

The Visualforce page calls the methods defined in the Apex controller class to invoke the action and provide a status on the tasks.

- 1. From setup, enter Visualforce in the Quick Find box.
- 2. Select Visualforce Pages.
- 3. Click New.
- **4.** Enter the Visualforce page label and description.



**5.** Replace the existing markup with this code.

```
}
       h4 {
           font-size: 24px;
       table {
           font-size: 20px;
           width: 100%;
       }
    </style>
    <div class="container-fluid">
/* Add HTML table to the Visualforce page that shows the accounts, the opportunity
creation status, and then finally the new opportunity name */
       <h4 id="message">Querying Accounts...</h4>
       <table name="results" id="results" data-role="table" class="table-bordered
table-striped table-responsive">
           <thead>AccountOpportunity</thad>
           </div>
   <script>
       $(function() {
           $.ajaxSetup({
               headers: {"Authorization": 'Bearer {!$Api.Session ID}'}
           });
           setTimeout(executeQuery, 1000);
       });
/* Executes the SAQL query and displays the resulting accounts. Note: Account.Name and
AccountId referenced below refer to the dataset field names. Update them to match your
dataset fields. */
       function executeQuery() {
           var query = {};
           query.statements = "{!JSENCODE(query)}";
           var queryObj = {query: query.statements};
           $.ajax({
               type: 'POST',
               url: '/services/data/v39.0/wave/query',
               data: JSON.stringify(queryObj),
               contentType: 'application/json',
               success: function(data) {
                   $('#message').html('Creating Opportunities...');
                   var record = null;
                   var row = null;
                   $('#results tbody').empty();
                   for (var i = 0; i < data.results.records.length; i++) {</pre>
                       record = data.results.records[i];
                       row = $('');
                       row.append($('').html(record['Account.Name']));
                       row.append($('
'">').html('Creating...'));
```

```
$('#results tbody').append(row);
                    }
                   setTimeout(function() {createOpportunities(data.results.records);},
 1000);
                },
            });
        }
/* Calls the Apex controller method that creates opportunities for each account and
returns the opportunity name for each account to the HTML table. */
        function createOpportunities(accountRecords) {
          CreateOpportunitiesController.create(accountRecords, function(result, event)
 {
                console.log(result);
                if (event.status) {
                    for (var i = 0; i < accountRecords.length; i++) {</pre>
                        $('td.' +
accountRecords[i].AccountId).html(result[accountRecords[i].AccountId]);
                  $('#message').html(accountRecords.length + ' Opportunities Created');
                else {
                    $('#message').html('Error: ' + event.message);
            });
    </script>
</apex:page>
```

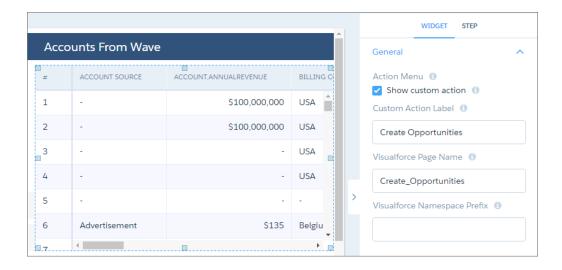
#### **6.** Click **Save**.

Assign Bulk Action to Table Widget

Configure the table widget properties to expose the bulk action defined in the Visualforce page.

- 1. Open the Analytics dashboard that contains the table widget.
- 2. Edit the dashboard.
- **3.** Select the table widget.
- **4.** In the widget properties, select **Show custom action**.
- **5.** Enter the following widget properties.

| Property                     | Description  |  |  |
|------------------------------|--|--|--|
| Custom Action Label          | Label for the action in the action menu.                       |  |  |
| Visualforce Page Name        | API name of the Visualforce page.                              |  |  |
| Visualforce Namespace Prefix | Optional. Namespace prefix specified for the Visualforce page. |  |  |



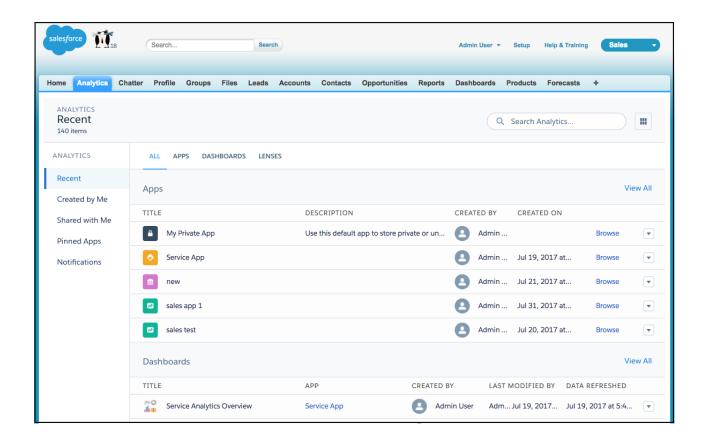
**6.** Save the dashboard.

# Integrate Analytics into Salesforce with an Analytics Tab

Access your Analytics home and run Analytics apps from a tab within Salesforce Classic or Lightning Experience. The Analytics tab is available in new Analytics-enabled orgs.



In existing orgs, set up the Analytics tab as you would any new tab.



The Analytics tab can include these features:

- Annotations, notifications, and full-screen presentation
- Sharing and downloading options
- Links to other Analytics assets
- Record actions menu
- Link to Analytics Studio (available for Analytics users but not Community users)

# Customize Analytics Dashboards using JSON

Configure advanced features in Analytics dashboards using JSON.

The easiest way to build dashboards in Analytics is to use the designer. However, if needed, you can further customize dashboards by editing their JSON files. The JSON defines the components of the dashboard and how they interact.

Modify a dashboard's JSON file to perform advanced customization tasks that can't be accomplished in the designer's user interface, like:

- Manually set up bindings to override the default faceting behavior and specify the relationships between the steps that aren't bound by default.
- Set guery limits.
- Specify columns for a values table.
- Specify a SAQL query.
- Populate a filter selector with a specified list of static values instead of from a query.
- Set up layouts for mobile devices for a dashboard.

The last three tasks only pertain to dashboards created with the classic designer. With the dashboard designer, you can use the user interface to accomplish these tasks—no JSON editing required.

For complete information about Dashboard JSON, see the Analytics Dashboard JSON Reference.

# Format Measures and Display Elements with Analytics Extended Metadata (XMD)

Set up your data and customize dashboard elements with Analytics Extended Metadata.

Extended metadata (XMD) enables you to customize the formatting of dataset fields and their values in Analytics dashboards and lenses. If you modify the XMD for a dataset, every UI visualization that uses the dataset shows the modified format.

You can customize the following with XMD:

- Format measures. Example: Show the decimal and grouping separators for currency.
- Add prefixes and suffixes to measures. Example: Show the percent symbol (%) after each percentage.
- Multiply measures by a factor. Example: Multiply by 100 to convert a decimal to a percent.
- Change display labels for dimensions and measures.
- Customize colors in charts based on field values.
- Define the first day of the week for the calendar year.
- Add action menus to dimensions that let dashboard viewers invoke actions from lenses and dashboards.

For complete information about Dashboard JSON, see the Analytics Extended Metadata (XMD) Reference.

# Manage and Share Analytics in Apps

Create Analytics apps to run presentations, organize your data projects, and control asset sharing.

Analytics apps can contain datasets, lenses, and dashboards. Create them to organize and run your analytics presentations, and share them with other people in your organization.

Examples of Analytics apps are the prebuilt Salesforce apps such as the Sales Analytics app and Service Analytics app. Like the apps you create yourself, these are collections of Analytics assets—in both cases, the apps include dashboards and datasets. The difference is that Salesforce has created the assets to provide a ready-made path through Salesforce data to help users get started fast with Analytics. Your own apps contain assets that you create yourself.

#### IN THIS SECTION:

#### App-Level Sharing

Analytics apps are like folders, allowing users to organize their own data projects—both private and shared—and control sharing of datasets, lenses, and dashboards.

### Create an App

Create an app to organize and contain any combination of lenses, dashboards, and datasets.

#### Set Up Navigation Through Your App

Target your app for customers with custom navigation that shows them the right dashboards and lenses.

#### Share an App

To enable others to see a lens, dashboard, or dataset, one way to share is by sharing the app it's in.

#### Delete an App

If you have Manager access to an app, you can delete it. Deleting an app permanently removes all of its lenses, dashboards, and datasets from Analytics.

### Analytics Migration, Packaging, and Distribution

Migrate Analytics assets using change sets, bundle them together in managed packages, distribute and track packages through AppExchange and the License Management App, and use the metadata API to manage customizations for your org.

# **App-Level Sharing**

Analytics apps are like folders, allowing users to organize their own data projects—both private and shared—and control sharing of datasets, lenses, and dashboards.

All Analytics users start off with Viewer access to the default Shared App that's available out of the box; administrators can change this default setting to restrict or extend access. Each user also has access to a default app out of the box, called My Private App, intended for personal projects in progress. The contents of each user's My Private App aren't visible to administrators, but dashboards and lenses in My Private App can be shared.

All other apps created by individual users are private, by default; the app owner and administrators have Manager access and can extend access to other users, groups, or roles.

Here's a summary of what users can do with Viewer, Editor, and Manager access.

| Action  | Viewer | Editor | Manager |
|---|--------|--------|---------|
| View dashboards, lenses, and datasets in the app  | Χ      | Χ      | Χ       |
| Note: If the underlying dataset is in a different app than a lens or dashboard, the user must have access to both apps to view the lens or dashboard.   |        |        |         |
| See who has access to the app   | Χ      | Χ      | X       |
| Save contents of the app to another app that the user has Editor or Manager access to   | X      | X      | X       |
| Save changes to existing dashboards, lenses, and datasets in the app (saving dashboards requires the appropriate permission set license and permission) |        | X      | X       |
| Change the app's sharing settings   |        |        | Χ       |
| Rename the app  |        |        | Χ       |
| Delete the app  |        |        | Χ       |

(1) Important: When users are deactivated, they lose share and delete access to all apps they manage. To avoid "stranding" an app, be sure that manager access is assigned to at least one active user BEFORE deactivating the user who's the manager of the app.

# Create an App

Create an app to organize and contain any combination of lenses, dashboards, and datasets.

- 1. On the home page, click **Create**.
- 2. Click App.
- **3.** Type the name of your app.
- 4. Click Create.

Your app is created and displayed in a new tab. You can now put lenses, dashboards, and datasets in it.

- **5.** Add a description of the app's purpose and contents so that your colleagues understand how to use the data.
  - **a.** Click in the description box under the app's name.
  - **b.** Type a description.
  - **c.** Click the check mark **v** to save.
- **6.** Optionally, change the app's default icon to make it easier to distinguish from other apps.
  - **a.** Hover over the default icon.
  - b. Click Change Icon.
  - **c.** Click an icon from the gallery.

# EDITIONS

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To create an app:

Create Analytics Apps

(1) Important: When users are deactivated, they lose share and delete access to all apps they manage. To avoid "stranding" an app, be sure that manager access is assigned to at least one active user BEFORE deactivating the user who's the manager of the app.

# Set Up Navigation Through Your App

Target your app for customers with custom navigation that shows them the right dashboards and lenses.

Follow these steps to set up an app's navigation.

- 1. Click to open the navigation panel. By default, the panel shows the first 20 assets alphabetically by name, including both dashboards and lenses.
- **2.** If you're the manager of an app, you see the **Organize** button. Click it to set up the app.



- **3.** Change the presentation order by sliding the Analytics assets up or down, and click asset names to hide or show them.
- **4.** To add more dashboards or lenses from the app, click the plus sign.
- **5.** To retain the navigation for your app, click **Save**. Share the app with colleagues or customers. When they run the app, it starts with the first asset in your navigation list.

# Share an App

To enable others to see a lens, dashboard, or dataset, one way to share is by sharing the app it's in.

- 1. On the app page, click the **Share** button.
- 2. On the Give Access tab:
  - **a.** Choose whether you're sharing the app with a user, group, or role.
  - **b.** Start typing the name and select from the suggested matches.
  - **c.** Choose the level of sharing access: Viewer, Editor, or Manager.
  - d. Click Add.
  - e. Click Save, then click Done.
- Important: When users are deactivated, they lose share and delete access to all apps they manage. To avoid "stranding" an app, be sure that manager access is assigned to at least one active user BEFORE deactivating the user who's the manager of the app.

## **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

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## **USER PERMISSIONS**

To share an app:

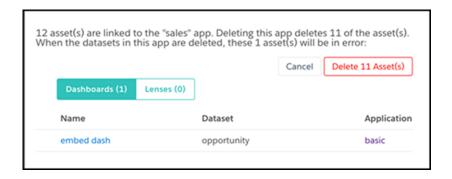
Use Analytics and Manager access to the app

# Delete an App

If you have Manager access to an app, you can delete it. Deleting an app permanently removes all of its lenses, dashboards, and datasets from Analytics.

- 1. Open the app, and then click **Delete**.
  - Warning: You can't recover a deleted app.

If applicable, Analytics lists the lenses and dashboards outside of your app that will be affected. When the datasets belonging to your app are deleted, any lens or dashboard that references those datasets becomes unusable.



# **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To delete an app:

 Use Analytics and Manager access to the app

- (1) Important: Only lenses and dashboards to which you have access appear in the list. If you don't have access to them, lenses and dashboards aren't listed even though they have references to datasets in your app.
- 2. Click Delete Asset(s).

# Analytics Migration, Packaging, and Distribution

Migrate Analytics assets using change sets, bundle them together in managed packages, distribute and track packages through AppExchange and the License Management App, and use the metadata API to manage customizations for your org.

### IN THIS SECTION:

#### Migrate Analytics Assets with Change Sets

Use change sets to move customized Analytics assets between orgs that have a deployment connection. For example, create an Analytics app containing dashboards, lenses, datasets, dataflows in your Sandbox org, then migrate the app assets to your production org once testing is complete.

### Package Analytics Assets in Managed Packages

You can create managed packages of Analytics assets, including Analytics apps, dashboards, lenses, datasets, dataflows, and master user XMD. Use packages to distribute those assets to other users or organizations, including those outside your company.

#### Distribute Analytics Assets Through AppExchange

Once your managed package is certified through our security review, you can make it available to your customers by uploading it to AppExchange. You can specify your package release type, control major and minor version numbers, and specify licensing options through the Licensing Management Application.

### Use the Metadata API for Analytics Assets and User XMD

Analytics provides full support for the Metadata API, which can be used to retrieve, deploy, create, update, or delete customizations for your organization.

# Migrate Analytics Assets with Change Sets

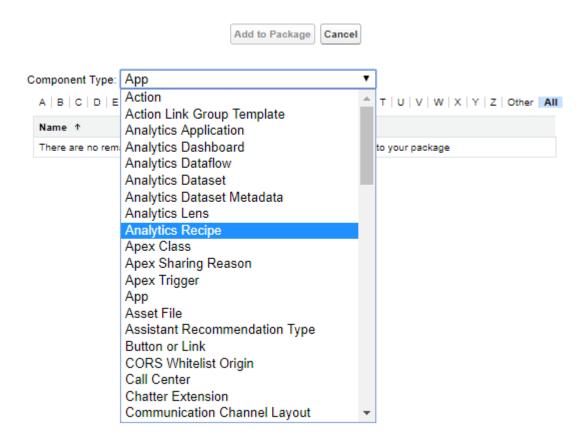
Use change sets to move customized Analytics assets between orgs that have a deployment connection. For example, create an Analytics app containing dashboards, lenses, datasets, dataflows in your Sandbox org, then migrate the app assets to your production org once testing is complete.



Tip: Remember, this topic describes how to migrate Analytics assets—such as lenses, customized dashboards, dataset containers, and so on. It does not discuss migrating Salesforce or Analytics data from org to org. Where this topic refers to an Analytics dataset, what actually gets migrated is the container; the dataset metadata.

#### To migrate Analytics assets:

- 1. Create and test your Analytics assets in your source org, such as Sandbox.
- 2. From Setup in your source org, select **Outbound Change Sets** and create a new one.
- 3. Click **Add** in the Change Set Components section, then use the **Component Type** drop-down list to select and add your Analytics assets to the change set. Each asset type is prefixed with "Analytics." Note that you must add dependent dataflows manually. That is, if you add a dataset to a change set, the associated dataflows are not automatically picked up.



- (1) Important: Analytics components include Analytics applications, dashboards, dataflows, datasets, lenses, recipes, and master user XMD. As you package Analytics components, keep these tips and best practices in mind.
  - Analytics unmanaged packages, as opposed to managed packages, are considered a developer-only feature and are not supported for general-purpose distribution. While Analytics unmanaged packages work as expected within the constraints of Salesforce unmanaged packages, they aren't subject to the same level of testing as managed packages. Unmanaged packages come without many of the safeguards of managed packages, and are intended for developers familiar with their limitations. Also refer to the relevant topic in the ISV Guide.
  - Before a recipe is available for packaging, you must create a dataset with the recipe.
  - Analytics Admin permissions are required to create a package but not for deployment, which requires only Salesforce admin permissions.
  - There is no spidering between datasets and dataflows, meaning there is no dependency following. When packaging both, they must be added manually. If they are not, an error appears during deployment. The same is true for change sets—when packaging both datasets and dataflows, add them manually.
  - Because views are user-specific, they aren't included when you package the dashboard.
  - The Winter '18 release contains a beta version of Apex steps, which lets developers include custom Apex functionality in a dashboard to access Salesforce platform features that aren't inherently supported in Analytics. If you include dashboards in a package, Apex steps are not included—migrate Apex classes separately.
  - Before the Spring '17 release, images didn't render when deploying a dashboard that used an image widget that referenced image files not available on the target org. There were two workarounds: Manually upload the images, or add a folder containing the images to the package. As of the Spring '17 release, images are packaged with the dashboard, and references

- between dashboards are maintained. You can't delete a dashboard that is referenced in a link. Either re-create the image, or link the widgets in the dashboard in the source org. Then repackage or fix the link issues in the target org.
- Take care when packaging dataflows. Invalid schema overrides and unsupported or illegal parameters are removed. For example, Type = dim is no longer supported. Use Type = text instead. Comments in JSON are removed. Nodes can appear in a different order.
- 4. Click View/Add Dependencies to ensure all dependent assets and appropriate permission sets and profile settings are added.
- **5.** Click **Upload** and select your target org, such as Production. Make sure that the target org allows inbound connections. The inbound and outbound orgs must have a deployment connection.
- **6.** From **Setup** in your target org, select **Inbound Change Sets** and find the one you uploaded from your source org.
- 7. Validate and deploy the change set, making sure to assign the right users to any permission sets and profiles you included. Your Analytics assets will be available in the target org.

For details on using change sets to migrate configuration changes between orgs, view the Release Management: Deploying Changes Using Change Sets (Salesforce Classic) video.

#### SEE ALSO:

**Change Sets** 

**Change Sets Best Practices** 

**Upload Outbound Change Sets** 

**Deploy Inbound Change Sets** 

## Package Analytics Assets in Managed Packages

You can create managed packages of Analytics assets, including Analytics apps, dashboards, lenses, datasets, dataflows, and master user XMD. Use packages to distribute those assets to other users or organizations, including those outside your company.

A package is a container for something as small as an individual component or as large as a set of related apps. Packages can be distributed to other Salesforce users and organizations, including those outside your company. While packages come in two forms—unmanaged and managed—Analytics supports only managed packages, which must be created from a Developer Edition organization.

Why only managed packages? There are some key advantages, especially around licensing and managing licenses. Using the AppExchange and the License Management Application (LMA), partners, ISVs, and developers can sell and manage user-based licenses for the app. Managed packages are also upgradeable, meaning you don't have to start over; you can incrementally upgrade.

To package Analytics assets:

- 1. From Setup in your Developer Edition org, select **Packages** and click **New** to create a managed package.
- 2. Click **Add** in the Components tab, then use the **Component Type** drop-down list to select and add your Analytics assets to the package. Each component type is prefixed with "Analytics". Note that you must add dependent dataflows manually. That is, if you add a dataset to a package, the associated dataflows are not automatically picked up.
  - (1) Important: Analytics components include Analytics applications, dashboards, dataflows, datasets, lenses, recipes, and master user XMD. As you package Analytics components, keep these tips and best practices in mind.
    - Analytics unmanaged packages, as opposed to managed packages, are considered a developer-only feature and are not supported for general-purpose distribution. While Analytics unmanaged packages work as expected within the constraints of Salesforce unmanaged packages, they aren't subject to the same level of testing as managed packages. Unmanaged packages come without many of the safeguards of managed packages, and are intended for developers familiar with their limitations. Also refer to the relevant topic in the ISV Guide.

- Before a recipe is available for packaging, you must create a dataset with the recipe.
- Analytics Admin permissions are required to create a package but not for deployment, which requires only Salesforce admin permissions.
- There is no spidering between datasets and dataflows, meaning there is no dependency following. When packaging both, they must be added manually. If they are not, an error appears during deployment. The same is true for change sets—when packaging both datasets and dataflows, add them manually.
- Because views are user-specific, they aren't included when you package the dashboard.
- The Winter '18 release contains a beta version of Apex steps, which lets developers include custom Apex functionality in a dashboard to access Salesforce platform features that aren't inherently supported in Analytics. If you include dashboards in a package, Apex steps are not included—migrate Apex classes separately.
- Before the Spring '17 release, images didn't render when deploying a dashboard that used an image widget that referenced image files not available on the target org. There were two workarounds: Manually upload the images, or add a folder containing the images to the package. As of the Spring '17 release, images are packaged with the dashboard, and references between dashboards are maintained. You can't delete a dashboard that is referenced in a link. Either re-create the image, or link the widgets in the dashboard in the source org. Then repackage or fix the link issues in the target org.
- Take care when packaging dataflows. Invalid schema overrides and unsupported or illegal parameters are removed. For
  example, Type = dim is no longer supported. Use Type = text instead. Comments in JSON are removed. Nodes
  can appear in a different order.
- 3. Click View Dependencies to ensure all dependent assets and appropriate permission sets and profile settings are added.
- **4.** Once packaged, prepare your apps for distribution.

#### SEE ALSO:

Package and Distribute Your Apps
Introduction to the License Management App

# Distribute Analytics Assets Through AppExchange

Once your managed package is certified through our security review, you can make it available to your customers by uploading it to AppExchange. You can specify your package release type, control major and minor version numbers, and specify licensing options through the Licensing Management Application.

To distribute an Analytics managed package:

- Submit your package for a security review.
   Before a package can be listed on AppExchange, it must meet established standards. Since packages containing Analytics assets can potentially contain standard Salesforce objects too, they are subject to the same security requirements as all other AppExchange listings.
- **2.** When your package is ready, click **Upload**, then fill in the required information.
- 3. Add version specifics, including the name (usually a description and date) and the version number.
- **4.** Choose the release type—*Managed Beta* or *Managed Released*—and an appropriate version number.

  The *Managed Beta* type is for testing, usually with a subset of customers, and allows changes that the *Managed Released* type does not.
- **5.** Add a description for your AppExchange listing.

- **6.** Optionally, add URLs for release notes and instructions, a password (if you wish to keep the package private), and any other objects required.
- 7. Click Upload.



Note: Deployment requires Salesforce admin permissions.

Use the AppExchange and the License Management Application (LMA) to manage user-based licenses. You can request the application through your partner community site.

#### SEE ALSO:

Package and Distribute Your Apps
Security Review Overview
Introduction to the License Management App

## Use the Metadata API for Analytics Assets and User XMD

Analytics provides full support for the Metadata API, which can be used to retrieve, deploy, create, update, or delete customizations for your organization.

Every time your Salesforce organization is customized, its metadata is modified. Editing page layouts, creating a custom field, or adding an Analytics dataflow are all metadata updates. Metadata is the information that describes the configuration of your organization and of your Analytics assets. It's data about your data. For example, the metadata type WaveLens includes properties that describe the lens—what dataset it uses, the label of the dashboard, what visualization widget type it uses (pivottable, stackvbar, heatmap, and so on).

You can create your own custom metadata types, which enable you to create your own setup objects whose records are metadata rather than data. Rather than building apps from data records in custom objects or custom settings, you can create custom metadata types and add metadata records, with all the manageability that comes with metadata: package, deploy, and upgrade.

While the Metadata API is the foundation on which change sets and packaging is built, developers can use the Metadata API to manipulate their Analytics assets. For example, your application could retrieve metadata about your dashboards and back it up to (and restore from) some repository, effectively providing version control.

You can package and deploy user XMD too. User XMD is a JSON document that allows an application to override certain metadata for a dataset. You can govern settings to control how the data is presented—for example, colors, formats, and labels. To deploy the overridden dataset metadata, you must package the user XMD attributes. Metadata API support allows migration tools to migrate datasets with user XMD between orgs—for example, you can migrate user XMD overrides from sandbox to production. Partners can deploy their application-specific user XMD with their AppExchange package. They retain control of the user XMD and can update it with future package versions. Refer to the WaveXmd metadata type in the Metadata API Developer Guide.

The following Analytics metadata types are supported in the Metadata API:

- WaveApplication
- WaveDashboard
- WaveDataflow
- WaveDataset
- Wavel ens
- WaveXmd

WaveTemplateBundle

SEE ALSO:

Understanding Metadata API

# Develop on the Analytics Platform

Find resources for developing with Analytics.

#### IN THIS SECTION:

#### The Analytics REST API

Access Analytics datasets and lenses programmatically using the Analytics REST API.

#### Salesforce Analytics Query Language (SAQL)

Use SAQL to access data in Analytics datasets. Analytics uses SAQL behind the scenes in lenses and dashboards to gather data for visualizations.

#### Analytics Migration, Packaging, and Distribution

Migrate Analytics assets using change sets, bundle them together in managed packages, distribute and track packages through AppExchange and the License Management App, and use the metadata API to manage customizations for your org.

#### Analytics Templates Developer Guide

Use Analytics Templates to "templatize" a master app, enabling others to build apps from your template.

#### The Analytics SDK

Use the Analytics SDKs to communicate with Analytics from Apex, Visualforce, Lightning apps, and more.

# The Analytics REST API

Access Analytics datasets and lenses programmatically using the Analytics REST API.

Using the Analytics REST API, you can:

- Send queries directly to the Analytics Platform.
- Access datasets that have been imported into the Analytics Platform.
- Create and retrieve Analytics lenses.
- Access XMD information.
- Retrieve a list of dataset versions.
- Create and retrieve Analytics applications.
- Create, update, and retrieve Analytics dashboards.
- Retrieve a list of dependencies for an application.
- Determine what features are available to the user.
- Work with and schedule Trend in Analytics report snapshots.
- Manipulate replicated datasets.
- Get, add, update, and delete 'eclair' geo map charts.
- Work with data connectors.
- Retrieve or update recipes.
- Discover whether objects and particular dataset versions have support for sharing inheritance.

For complete information about the API, see the Analytics REST API Developer Guide.

SEE ALSO:

Enable the Analytics REST API

# Salesforce Analytics Query Language (SAQL)

Use SAQL to access data in Analytics datasets. Analytics uses SAQL behind the scenes in lenses and dashboards to gather data for visualizations.

Developers can write SAQL to directly access Analytics data via:

Analytics REST API

Build your own app to access and analyze Analytics data or integrate data with existing apps.

Dashboard JSON

Create advanced dashboards. A dashboard is a curated set of charts, metrics, and tables.

For complete information about SAQL, see the Analytics SAQL Reference.

SEE ALSO:

View the Query Behind Your Lens

# Analytics Migration, Packaging, and Distribution

Migrate Analytics assets using change sets, bundle them together in managed packages, distribute and track packages through AppExchange and the License Management App, and use the metadata API to manage customizations for your org.

#### IN THIS SECTION:

#### Migrate Analytics Assets with Change Sets

Use change sets to move customized Analytics assets between orgs that have a deployment connection. For example, create an Analytics app containing dashboards, lenses, datasets, dataflows in your Sandbox org, then migrate the app assets to your production org once testing is complete.

#### Package Analytics Assets in Managed Packages

You can create managed packages of Analytics assets, including Analytics apps, dashboards, lenses, datasets, dataflows, and master user XMD. Use packages to distribute those assets to other users or organizations, including those outside your company.

#### Distribute Analytics Assets Through AppExchange

Once your managed package is certified through our security review, you can make it available to your customers by uploading it to AppExchange. You can specify your package release type, control major and minor version numbers, and specify licensing options through the Licensing Management Application.

## Use the Metadata API for Analytics Assets and User XMD

Analytics provides full support for the Metadata API, which can be used to retrieve, deploy, create, update, or delete customizations for your organization.

# Analytics Templates Developer Guide

Use Analytics Templates to "templatize" a master app, enabling others to build apps from your template.

For complete information about Analytics Templates, see the *Analytics Templates Developer Guide*..

# The Analytics SDK

Use the Analytics SDKs to communicate with Analytics from Apex, Visualforce, Lightning apps, and more.

## **Analytics Web SDK**

Would you like your application to communicate with your Analytics dashboards, whether your application is built with the Lightning SDK, Visualforce, or mobile? How about from an application outside of Salesforce? Wouldn't it be great if your application could apply filters or know about dashboard selections and filters made by a user?

Your application could take actions specific for your business if values fall outside of defined ranges. Or you could have an application that is a viewpoint for dashboards made available by different parts of your business application ecosystem. Imagine that: a single information source to present to your executive staff!

The Analytics Web SDK events we're making available are the foundation for a new way of thinking about Analytics applications. Coupled with the Locker Service, you can even code your application outside of Salesforce—you can interact with Analytics from any JavaScript application.

### **Analytics Apex SDK**

Is your company one of the gazillion making use of custom code in Apex, the server-side programming language for Lightning Platform? Would you like it to be easier to query data in Analytics directly from your Apex code? Say hello to the Analytics Apex SDK and send well-formed SAQL queries to Analytics.

This first phase of the Analytics Apex SDK lets developers build SAQL queries and execute them in the security context of the logged-in user, ensuring that security settings are honored. API versioning is supported to avoid breaking applications as the SDK evolves. The SDK also offers Wave.InvalidParameterException to help catch bad values supplied to the class methods.

For complete information about the SDK, see the Analytics SDK Developer Guide.

# Deploy Analytics templated apps and prebuilt apps

Analytics templated apps give you a great way to get started with your Analytics journey. Create an app from a template to get best-practice dashboards and KPIs that your team can use out of the box to drive business success or customize to meet your precise requirements.

Analytics templated apps and prebuilt Analytics apps from Salesforce speed your organization's time-to-value with Analytics. Instead of having to build visualizations yourself, with templates we do the heavy lifting for you. Creation is simple. Either create and app from a template with just a few clicks or answer questions in a handy configuration wizard. Analytics takes care of the rest, creating datasets and dashboards designed and built by Salesforce based on our years of experience helping companies manage their customer interactions.

Many apps are designed for both desktop and mobile devices. They come with dashboards that you can embed in Salesforce pages to give users direct access to business intelligence right from the Salesforce pages where they do their everyday work. And you can drill deeper into key aspects of your business by customizing to meet your specific needs.

# EDITIONS

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

To get started, see generic instructions for creating apps from templates and specifics for each template by following these links.

#### IN THIS SECTION:

#### Create Apps from Analytics Templates: Start Here

Follow these general procedures when you create Apps from any Analytics Template. Before you create an app, see the help for the Analytics Template you want to use for requirements and instructions specific to that template.

#### Adoption Analytics Template

Create an app from the Adoption Analytics template for ready-made insight into how your team uses Analytics assets.

#### B2B Marketing Analytics App

B2B Marketing Analytics provides advanced analytics for the data-driven marketer, letting you explore both your marketing and sales data in one place. With powerful dashboards that consolidate Pardot and Sales Cloud data, you can quickly explore data, understand the impact of marketing on revenue, and take instant action to drive marketing results.

## **Event Monitoring Analytics App**

The Event Monitoring Analytics App integrates with event monitoring and setup audit trail data to give you insights into your user and org behavior. The app is a built-in way to explore your monitoring data in Salesforce. App creation is easy and with its prebuilt dashboards and datasets, you can start exploring right away. This app helps you drill into your org's data and swiftly identify suspicious behavior, slow page performance, and poor user adoption.

#### Campaign Analytics Template

The Campaign Analytics template uses the power of Einstein Analytics to show how your marketing campaigns impact the bottom line.

## Change Analytics Template

Use Change Analytics to visualize field history data in any Salesforce object and learn how, when, and where members of your team change data.

#### The Field Service Analytics App

The Field Service Analytics app brings the power of Analytics to Field Service Lightning on any device that supports Analytics.

## Financial Advisor Analytics Template

Create an app from the Financial Advisor Analytics template to apply the power of Analytics to data from the Financial Services Cloud.

### Fundraising Analytics Template

The Fundraising Analytics template lets you create an app that brings the power of Analytics to data from the Salesforce Nonprofit Success Pack.

## Health Cloud Analytics Template

The Health Cloud Analytics template creates an app that lets healthcare coordinators identify high-risk patients to make sure they get the extra care they need.

#### Pipeline Analytics Template

Use Pipeline Analytics to plug your pipeline snapshot data into a ready-made waterfall dashboard. You get instant insight into how the pipeline changes between two snapshots.

#### **Quoting Analytics Template**

Create an app using the Quoting Analytics template to get instant insights into your configure-price-quote (CPQ) processes.

#### Sales Analytics App

The Sales Analytics app brings the power of Analytics to Sales Cloud on any device that supports Analytics. With intuitive visualizations based on your Salesforce data, Sales Analytics lets you move from insight to action quickly and helps you turn data into smarter sales.

### Service Analytics App

The Service Analytics app gets you started fast with Analytics and provides a clear path through your Service Cloud data on any device. Whether you're a service manager or agent, you get everything you need in one place to uncover key data insights to help you grow your business.

#### **Snapshot Analytics Template**

Create an app using the Snapshot Analytics template to trend data from any existing Einstein Analytics dataset or Salesforce object.

#### Social Case Analytics Template

The Social Case Analytics template creates an app that provides ready-made insights into team performance on each social channel.

# Create Apps from Analytics Templates: Start Here

Follow these general procedures when you create Apps from any Analytics Template. Before you create an app, see the help for the Analytics Template you want to use for requirements and instructions specific to that template.

Before creating an app, set up your org to use the Analytics platform and Analytics templated apps. See Set Up the Analytics Platform.



Tip: For best results, follow the steps in the order shown.

## **USER PERMISSIONS**

To create apps from Analytics templated apps and manage them:

- Manage Analytics
   Templated Apps
- Edit Analytics Dataflows

#### IN THIS SECTION:

- Create and Share an App from an Analytics Template
   Follow these generic steps to create and share an app from the Analytics template of your choice.
- 2. How to Answer Analytics Template Custom Wizard Questions

Some Analytics templates include a custom configuration wizard, which asks you a series of questions about your data. Follow these general guidelines to get the best result. Help for each template with a custom wizard provides details for that template.

3. Schedule the Dataflow for an Analytics Template

When you create an app from a template, the creation process includes a dataflow that imports the latest data to Analytics. Schedule the dataflow to be rerun every day to assure that your app uses up-to-date data.

4. Set Field Level Security to Enable Creation of an Analytics Template

Before creating an app from a template, you may have to give the Analytics Integration User access to all fields used in the app.

#### SEE ALSO:

Set Up the Analytics Platform

## Create and Share an App from an Analytics Template

Follow these generic steps to create and share an app from the Analytics template of your choice.

- (1) Important: Before following these steps, read the help for the template you want to create. Each template has specific org set-up and data requirements. Make sure that your org meets those requirements before trying to create the app.
- 1. Navigate to Analytics Studio.
- **2.** Click **Create**, then select **App**.
- **3.** Select a template. You may have to scroll to find it. Then click **Continue**.

## **USER PERMISSIONS**

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

If the template you choose includes a configuration wizard, it opens now. Answer the questions on each page of the wizard. The first page asks you to choose between creating a new app or using answers of an existing app if you've created an app from that template already. See the help for the template for instructions about using the wizard. If you don't see a page with questions, you're almost done creating your app.

Some wizards perform a compatibility check of your org's data. If so, you see a wizard page that shows each stage of the org check. If it uncovers any issues, you see error messages with instructions about how to address them. Fix the issues and try app creation

4. Name your app and click Create.

View the status of app creation on the next page. The process takes a minute or two. Once it's complete, refresh the page to see your app.



Note: If you see an error saying the Analytics Integration User does not have access to selected fields, edit Salesforce field-level security so the Integration User has the required access and create the app again.

Now that you've created the app, share it with users in your organization. You can only share it with users assigned the Einstein Analytics Platform User permission set. To share the app, go to the top-level Analytics Studio page, roll your cursor over the icon for the app and click **Share**. Next, type in the names of team members, click **Add**, and click **s**.

## How to Answer Analytics Template Custom Wizard Questions

Some Analytics templates include a custom configuration wizard, which asks you a series of questions about your data. Follow these general quidelines to get the best result. Help for each template with a custom wizard provides details for that template.

- Most questions provide answers in pick lists showing fields from Salesforce objects. The lists include standard Salesforce fields and any custom fields you've set up on an object. Answer these questions by selecting from the fields shown. Most questions of this type let you choose only one field, and some let you choose multiple fields.
- You can choose a field from an object only once. After you select a field, it's no longer available as an answer to other questions.
- Other questions are yes/no, provide a set of options, or require you to enter text.
- Questions marked with an asterisk (\*) require answers.
- **Using the default answers results in a useful set of dashboards.** If you're not sure what to select, use the answer that's preselected. Some questions do not have preselected answers. In those cases, Analytics reminds you to make a selection. If you're not happy with the result, you can delete the app and create it again.
- You control only parts of the app with wizard settings, such as the filters used in dashboards. We built the app to provide immediate value without much work on your part.
- Only some answers make sense given the question's context. The answer pick-lists contain many fields, but only some make sense for your app. For example, it's unlikely that you'd filter Accounts data by Photo URL, even though the Accounts object includes a Photo URL field.
- Important: Fields that aren't available to the Analytics Integration User aren't visible in the wizard. See Schedule the Dataflow for an Analytics Template to give the Integration User access to all the fields you want your app to use.

## Schedule the Dataflow for an Analytics Template

When you create an app from a template, the creation process includes a dataflow that imports the latest data to Analytics. Schedule the dataflow to be rerun every day to assure that your app uses up-to-date data.

## **USER PERMISSIONS**

To create and manage the Adoption Analytics app:

Manage Analytics **Templated Apps** 

To use the Adoption Analytics app:

Use Analytics Templated Apps

- 1. In Analytics Studio, click the wheel icon at upper right and select **Data Manager**.
- 2. Select Dataflows.
- 3. Look for the name of your app, and click the triangle to the far right.
- **4.** Select **Schedule**, and set a time for updating data in your app. Select a time outside normal work hours so the dataflow doesn't interrupt business activities.
- 5. Click Save.

The dataflow for your app now runs ever day at the time you set.

## Set Field Level Security to Enable Creation of an Analytics Template

Before creating an app from a template, you may have to give the Analytics Integration User access to all fields used in the app.

You may have to set Salesforce field-level security to enable the Analytics Integration User to see all fields used in the app you create. Integration users run the dataflow, and if they don't have proper field-level security permissions, the dataflow can fail.

#### Follow these steps in Lightning Experience.

- 1. Go to Salesforce Setup, enter object in the Quick Find/Search box, and hit Enter.
- 2. Select Object Manager.
- 3. Enter the name of the object whose field-level security you need to edit in the **Quick Find / Search** box, and hit enter.
- 4. Select the object you need to edit, then select Fields & Relationships.
- **5.** Select the field you need to edit, then select **Set Field-Level Security**.
- **6.** Look for the Analytics Cloud Integration User, check the box(es) for the required fields under **Visible**, and click **Save**.
- 7. Repeat the Steps 5 and 6 for all fields you want to use.
- 8. Refresh your browser cache.

### Follow these steps in Salesforce Classic.

- 1. **Step 1.** Go to Salesforce Setup and enter the name of the object whose field-level security you need to edit in the **Quick Find/Search** box and hit **Enter**.
- 2. Step 2. Click the name of the object.
- 3. Step 3. The next window shows all the fields for the object. Go to the one(s) where you need to edit field-level security.
- 4. Step 4. Look for the Analytics Cloud Integration User, check the box(es) for the required fields under Visible, and click Save.
- 5. **Step 5.** Look for the Analytics Cloud Integration User, check the box(es) for the required fields under **Visible**, and click **Save**.
- **6. Step 6.** Repeat Steps 2 through 5 for all objects with fields you want to use.
- 7. Step 7. Refresh your browser cache.

You can now create an app from the template.

## **USER PERMISSIONS**

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

# **Adoption Analytics Template**

Create an app from the Adoption Analytics template for ready-made insight into how your team uses Analytics assets.

The app you create from the Adoption Analytics template provides datasets and prebuilt dashboards showing how your team uses Analytics datasets, dashboards, and apps. Use the app as is to measure Analytics usage in your org, or explore and customize based on your team's needs.

1

**Important:** See Create Apps from Any Analytics Template: Start Here on page 616 for general app creation procedures for all Analytics templated apps. The information here provides specifics about creating and using the Adoption Analytics app.

## **Org Requirements**

Your org requires the following before you can create an app from the Adoption Analytics template:

- Make sure you and all app users have the Analytics Platform license.
- Install the Analytics Adoption Metadata package available on AppExchange. The package's AppExchange page includes installation and setup instructions.
- After you install the package, set Salesforce field-level security to enable the Analytics Integration User to see all fields in the custom objects created by the package, DatasetSpecs and Datasets to Assets Mapping.
- Enable **View Event Log Data in Analytics Apps** in Salesforce Setup. If you have only the Analytics Platform license, your app will include Analytics log data. If you also have the Event Monitoring license, your app will include Event Monitoring bundle data.
  - (1) Important: Be sure to enable View Event Log Data in Analytics Apps in setup before you create the Adoption Analytics app.

## The Adoption Analytics Configuration Wizard

Adoption Analytics includes a one-page configuration wizard. It asks you to choose the number of days of Analytics data you'd like to view in Adoption Analytics. Choose a number of days from 1 to 365.

## **Use Adoption Analytics**

The Adoption Analytics app includes two prebuilt dashboards that visualize how your team uses Analytics.

**Analytics Adoption**. Shows how each member of your team uses Analytics apps dashboards, and lenses. Sort by individual team member, department, division, and other groupings. You can also sort by asset type. Also view the most popular assets, unused assets, and users who don't use any assets. Usage notes about the dashboard:

- Trend chart. Number of views by asset type by day.
- **Percent calculations**. Number of users with Analytics permission set licenses who interact with asset type at least once according to selected period / Number of users with Analytics permission set licenses \* 100.
- **DAU**. Daily Active Users. Number of unique users/number of days with data in the dataset.
- MAU. Monthly Active Users. Number of unique users interacting with Analytics assets at least once in the last 30 days.

Dataset Linkage. Shows use of datasets by Analytics assets, mapping apps, dashboards, and lenses to the datasets where they get data.

You can also create your own explorations using the app datasets.

## **USER PERMISSIONS**

To create and manage the Adoption Analytics app:

- Adoption Analytics Templates and Apps
- Manage Analytics Templated Apps

To use the Adoption Analytics app:

 Use Analytics Templated Apps

## **Adoption Analytics Limitations**

These limitations apply to Adoption Analytics.

- Datasets created for the app count against row limits for your Analytics license.
- Includes only Analytics logs. For any Salesforce logs, use Event Monitoring.
- The first time you use Adoption Analytics, it may take 24 hours for data to collect in event logs before it can be registered in the app's datasets and dashboard.

# **B2B Marketing Analytics App**

B2B Marketing Analytics provides advanced analytics for the data-driven marketer, letting you explore both your marketing and sales data in one place. With powerful dashboards that consolidate Pardot and Sales Cloud data, you can quickly explore data, understand the impact of marketing on revenue, and take instant action to drive marketing results.



**Note**: Help for the B2B Marketing Analytics app currently resides within the Salesforce Pardot Knowledge Base. Go to the B2B Marketing Analytics overview page to get started.

# **Event Monitoring Analytics App**

The Event Monitoring Analytics App integrates with event monitoring and setup audit trail data to give you insights into your user and org behavior. The app is a built-in way to explore your monitoring data in Salesforce. App creation is easy and with its prebuilt dashboards and datasets, you can start exploring right away. This app helps you drill into your org's data and swiftly identify suspicious behavior, slow page performance, and poor user adoption.



**Note:** As part of Event Monitoring, you also get the Event Monitoring Analytics App. Use this app to upload and access only the data provided to you as part of your subscription. Please prevent your users from using the app to upload or access any other data. Salesforce sometimes monitors such usage. The Event Monitoring Analytics App is available in English only. If you have an Analytics Platform license, you can access dashboards in the Event Monitoring Analytics app. Hourly event log file integration with the Event Monitoring Analytics app is Beta functionality available upon request. When hourly event log files are enabled in the Event Monitoring Analytics app, daily event log file data is unavailable. Data is refreshed once a day in the app, regardless of whether daily or hourly log files are used.

Event Monitoring log files aren't a system of record for user activity. They are a source of truth, but aren't durable. During Salesforce site switches, instance refreshes, or unplanned system outages, data loss can occur.

For example, if Salesforce moves your production org instance, your event log files might have a gap in data. Salesforce makes commercially reasonable efforts to preserve event log file data integrity and avoid data loss. When Salesforce performs a site switch or instance refresh, it uses an automated process to replicate event logs.

#### IN THIS SECTION:

Set Up Salesforce Permissions for the Event Monitoring Analytics App
 Set up your org to use the Event Monitoring Analytics App by enabling Analytics, assigning permission set licenses, and then creating and assigning permission sets.

2. Create and Share the Event Monitoring Analytics App
After you've enabled the correct permissions, the setup for the Event Monitoring Analytics App is simple.

## **EDITIONS**

Available in: Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, and **Unlimited** Editions

## **USER PERMISSIONS**

To use the Event Monitoring Analytics App:

 Use Analytics Templated Apps

To create and manage Event Monitoring Analytics Apps:

- Access Event Monitoring Analytics Templates and Apps
- Use Analytics Templated Apps
- Edit Analytics Dataflows

- 3. Upgrade the Event Monitoring Analytics App
  - Take advantage of the latest Event Monitoring Analytics features by upgrading your app every time we release a new version.
- 4. Schedule the Event Monitoring Analytics Daily Dataflow
  Schedule a daily dataflow before you start exploring with Event Monitoring Analytics.
- 5. Event Monitoring Analytics App Prebuilt Dashboards
  - The Event Monitoring Analytics App comes with a set of prebuilt dashboards so that you can start exploring your data right away. Data from your org is automatically loaded into your Event Monitoring Analytics App datasets when it's generated.
- 6. Get to Know Event Monitoring Analytics App Terminology

  To make the best use of the Event Monitoring Analytics App, it's helpful to understand the metrics and terms used in the app.

## Set Up Salesforce Permissions for the Event Monitoring Analytics App

Set up your org to use the Event Monitoring Analytics App by enabling Analytics, assigning permission set licenses, and then creating and assigning permission sets.



**Note:** As part of Event Monitoring, you also get the Event Monitoring Analytics App. Use this app to upload and access only the data provided to you as part of your subscription. Please prevent your users from using the app to upload or access any other data. Salesforce sometimes monitors such usage. The Event Monitoring Analytics App is available in English only. If you have an Analytics Platform license, you can access dashboards in the Event Monitoring app.

Each Event Monitoring Analytics Apps license provides access to Event Monitoring Analytics to up to 10 users. The table shows data storage limits for the app. If you require more data, you can purchase Analytics Cloud - Additional Data Rows, which entitles you to an additional 100 million rows.

# **USER PERMISSIONS**

To create and manage Event Monitoring Analytics Apps:

- Access Event Monitoring Analytics Templates and Apps
- Manage Analytics Templated Apps
- Edit Analytics Dataflows

Table 3: Event Monitoring Analytics App Data Storage Limits

| License                                | Limit  |
|--|--|
| Event Monitoring Analytics Apps        | 50 million rows when used without Analytics Platform license. Provides access to up to 10 users. |
| Analytics Cloud - Additional Data Rows | 100 million rows.  |



Event log file data is available for the past 30 days. If you have a Developer Edition org, it's available for the last 24 hours.

Your org can use the Event Monitoring Analytics App with or without the Salesforce Analytics platform. The Event Monitoring Analytics app is available for free to any org with the paid Event Monitoring license. The Event Monitoring Analytics Apps license enables the following permissions.

**Table 4: Event Monitoring Analytics App User Permissions** 

| Permission   | Function   |  |
|--|--|--|
| Use Analytics Templated Apps                         | Enables access to all Analytics templated apps, including the Event Monitoring Analytics App.  |  |
|  | Warning: This permission allows users to access event<br>monitoring data without requiring the View Event Log Files<br>and API Enabled user permissions. Use caution when<br>assigning it. |  |
| Access Event Monitoring Analytics Templates and Apps | Gives admins the ability to create Event Monitoring Analytics apps.  |  |
| Manage Analytics Templated Apps                      | Gives admins the ability to create templated Analytics apps for users in their orgs.   |  |
| Edit Analytics Dataflows                             | Enables admins to upload and download JSON for existing data flows.  |  |

## **Event Monitoring App Setup Process**

For best results, follow the steps for setting up the Event Monitoring Analytics app in the order shown.

#### IN THIS SECTION:

- 1. Event Monitoring Analytics App Permission Set License and User Permissions
  - The Event Monitoring Analytics Apps permission set license enables the user permissions required to explore data with and manage the Event Monitoring Analytics app.
- 2. Identify Event Monitoring Analytics App User Types
  - Identify Event Monitoring Analytics app user types and the tasks they perform to ensure that the setup process meets your team's event monitoring analytics needs.
- 3. Enable Analytics and Event Monitoring Integration with Analytics
  - After Salesforce provisions you with the Event Monitoring Analytics Apps license, enable Analytics and Event Monitoring.
- 4. Select User Permissions and Assign Users to Event Monitoring Analytics App Permission Sets
  - Give your users access to Event Monitoring Analytics features by assigning one or more permission sets based on the capabilities they need.

## Event Monitoring Analytics App Permission Set License and User Permissions

The Event Monitoring Analytics Apps permission set license enables the user permissions required to explore data with and manage the Event Monitoring Analytics app.

Each Event Monitoring app user needs an Event Monitoring Analytics Apps permission set license. The Event Monitoring Analytics Apps permission set license enables the following permissions.

**Table 5: Event Monitoring Analytics Apps Permissions** 

| User Permission              | What It Enables   |  |
|------------------------------|---|--|
| Use Analytics Templated Apps | General access to all Analytics templated apps, including the Event Monitoring Analytics app. |  |

| User Permission                                      | What It Enables  |
|--|--|
| Access Event Monitoring Analytics Templates and Apps | The ability to create Event Monitoring Analytics apps.   |
| Manage Analytics Templated Apps                      | The ability to create templated Analytics apps for users in their orgs.  |
| Edit Analytics Dataflows                             | Editing, starting, stopping, and rescheduling the dataflow. Creating, editing, and running dataset recipes. Monitoring dataflow and system jobs in the data monitor. Use discretion when assigning this user permission because it enables access to all Salesforce object data to which the Integration User has access. See Salesforce Data Access in Analytics. |

## Identify Event Monitoring Analytics App User Types

Identify Event Monitoring Analytics app user types and the tasks they perform to ensure that the setup process meets your team's event monitoring analytics needs.

The Event Monitoring Analytics Apps license includes the permissions required by users in your organization to administer Event Monitoring Analytics and explore event data. Set up Event Monitoring Analytics by considering the different ways people can access Event Monitoring Analytics features and categorizing users into types. Here are a few examples.

In most cases, Event Monitoring Analytics addresses the needs of two basic types of people on your team:

- Users, who view Event Monitoring Analytics dashboards and datasets.
- Administrators or managers, who access all Event Monitoring Analytics functionality to create apps, dashboards, and datasets, and otherwise customize the Event Monitoring app experience.

Accordingly, when you set up Event Monitoring Analytics, creating two basic permission sets probably meets the needs of most users in your organization:

- A "view" permission set that contains the permissions needed by most basic-level users when they access Event Monitoring Analytics.
- A "manage" permission set that's reserved for a select few administrators and managers and contains permissions to use all Event Monitoring Analytics features.

In the detailed Event Monitoring Analytics app setup instructions that follow, we show you how to create and assign these two permission sets. Or, you can use the standard permission sets we provide.

### Enable Analytics and Event Monitoring Integration with Analytics

After Salesforce provisions you with the Event Monitoring Analytics Apps license, enable Analytics and Event Monitoring.

#### **Enable the Analytics Platform**

- 1. In the Salesforce Setup menu, under Administer, select **Analytics Cloud | Getting Started**.
- 2. Click Enable Analytics.

#### **Enable Event Monitoring**

- 1. In Setup, enter *Event* in the Quick Find box, then select **Event Monitoring Setup**.
- 2. Select View Event Log Data in Analytics Apps.

## Select User Permissions and Assign Users to Event Monitoring Analytics App Permission Sets

Give your users access to Event Monitoring Analytics features by assigning one or more permission sets based on the capabilities they need.

After enabling Analytics and Event Monitoring Integration with Analytics, identify users who will access the Event Monitoring Analytics app and assign them to a permission set. You can create any permission set you need to meet the needs of your users. For convenience, two standard permission sets are provided.



To create permission sets:

 Manage Profiles and Permission Sets

| Standard Permission Sets              | For   |
|---------------------------------------|---|
| Event Monitoring Analytics Apps Admin | Users who create and customize Event Monitoring Analytics apps and data flows |
| Event Monitoring Analytics Apps User  | Users who view Event Monitoring Analytics apps                                |

Let's begin selecting the user permissions in the Event Monitoring Analytics Apps Admin standard permission set.

- 1. From Setup, enter *Permission Sets* in the Quick Find box, then select **Permission Sets**.
- 2. Select the Event Monitoring Analytics Apps Admin permission set.
- 3. Select the feature permissions to enable for your permission set. Use Find Settings to search for them quickly. Select Use Analytics Templated Apps, Access Event Monitoring Analytics Templates and Apps, Manage Analytics Templated Apps, and Edit Analytics Dataflows. Make sure to select all four permissions.
- **4.** Click **Save**. You can now assign the permission set to users. See Assign Permission Sets to a Single User.
- 5. Repeat the steps for the Event Monitoring Analytics Apps User standard permission set. However, for this permission set, select only the **Use Analytics Templated Apps** user permission, because your end users need only view access. If they need more access, you can create your own permission set by cloning and customizing the standard permission set.
- Warning: Assign the Event Monitoring Analytics Apps Admin permission set carefully, because it lets users create, edit, and delete the app. Assign it only to users who administer or manage the app.

#### SEE ALSO:

Assign Permission Sets to a Single User Create Permission Sets

## Create and Share the Event Monitoring Analytics App

After you've enabled the correct permissions, the setup for the Event Monitoring Analytics App is simple.

If you haven't enabled permissions and event log file integration, complete the steps in Enable Analytics and Event Monitoring Integration with Analytics on page 623.



Note: Because event log files have a 24-hour generation period, you won't see your data in the app for the first day after you create it. The app includes some sample data so you can preview your dashboards in the meantime. Event log file data is available for the past 30 days. If you have a Developer Edition org, it's available for the last 24 hours.

- 1. Log in to Salesforce.
- 2. Select Analytics from the App Picker.
- 3. Click App, select Event Monitoring Analytics App, and then click Continue.
- **4.** Give your app a name.
- 5. Click Create. The app creation process can take a while. You can check the progress by selecting **Data Manager** from the gear menu at the top of the page. If any part of your app creation fails, you'll need to recreate the app.

## **USER PERMISSIONS**

To use the Event Monitoring **Analytics App:** 

Use Analytics Templated **Apps** 

To create and manage Event Monitoring Analytics App:

- Access Event Monitoring Analytics Templates and **Apps**
- Manage Analytics Templated Apps
- **Edit Analytics Dataflows**

6. After your app is ready to go, you can share it with other users in your org. Remember that only users with the Manage Analytics Templated Apps and Access Event Monitoring Analytics Templates and Apps permissions can see the app. To share your app, hover your mouse over the app tile on the Analytics home screen and click **Share**. You can also share from the app itself.

## Upgrade the Event Monitoring Analytics App

Take advantage of the latest Event Monitoring Analytics features by upgrading your app every time we release a new version.

The banner at the top of your app home page tells you that we've released a new version. It also provides a link to more information about the release. There's also a link inviting you to start the upgrade process in the left column of the home page, just below the app name.

Here's how to upgrade your app.

- 1. Click either the What's new link in the banner or the New version available link in the left column of your app's home page.
- 2. You can read information about the new version on top of the page that opens. At the bottom of the page, find the buttons: **Upgrade current app** and **Create new app**.
- 3. See descriptions of what the buttons do by hovering over them. If you click **Upgrade current** app, you overwrite your current app and all its assets, replacing it with an app based on the new version. Upgrading also deletes any customizations, including any new fields or object that you've added to the dataflow or changes you've made to security settings and dashboard labels and colors. If you click **Create new app**, you create a second copy of your current app based on the new version. Decide which option suits your circumstances, and click the appropriate button.
- Warning: If you've customized your app, click Create new app instead of Upgrade current app to make an app copy based on the new version. Creating a new app preserves the current version and any customizations, which you can then manually copy into the new version of the app.

If you click **Upgrade current app**, you see a screen warning you that the upgrade option overwrites the current app and gets rid of any customizations you've made. If you're OK with overwriting customizations, check the box and click **Continue**. If you're not, click **Back** to return to the previous screen. Clicking **Continue** takes you to the configuration wizard. Skip ahead to step 6.

## **USER PERMISSIONS**

To create and manage Event **Monitoring Analytics Apps:** 

- Access Event Monitoring Analytics Templates and Apps
- Manage Analytics **Templated Apps**
- **Edit Analytics Dataflows**

- **5.** If you click **Create new app**, you're taken to the configuration wizard. You don't see a warning, since you're not overwriting your current app, which is preserved with any customizations you've made to it.
- **6.** The configuration wizard is preloaded with the settings you chose last time you used the wizard. You can either keep those settings or change them. Go through each page of the wizard.
- 7. Once you complete the wizard, Analytics shows a screen that indicates which assets are impacted by the upgrade. Review the screen to see how many datasets, dashboards, and lenses will be changed, deleted, or added by the upgrade. It also shows how changed assets will be modified—whether the change is to data or appearance. On the same screen, you have the option to download a file with code for changes made to the app. If you've customized the app, download and save the file so you can copy and paste customization code into the upgraded version.
- **8.** Upgrade option only: If you're upgrading your app, click **Upgrade current app**. Remember, this overwrites any customizations you've made. You can also click **Back** to go back into the configuration wizard and change your selections or click the **X** in the upper-right corner to cancel.
- **9.** Create option only: If you're creating a new app, name your app something different from the current version and click **Create new app**. This option saves your current app and all its customizations. You can also click **Back** to go back into the configuration wizard and change your selections or click the **X** in the upper-right corner to cancel.

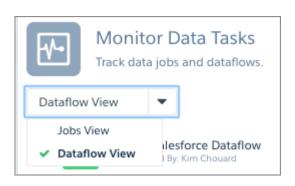
If the link below the app name says "Reset app," you're using the latest version and don't need to upgrade.

## Schedule the Event Monitoring Analytics Daily Dataflow

Schedule a daily dataflow before you start exploring with Event Monitoring Analytics.

When you create Event Monitoring Analytics, the creation process includes a dataflow that imports the latest Event Monitoring data to Analytics. You can schedule the dataflow to be rerun every day to assure that your app uses up-to-date Salesforce data. Salesforce generates and uploads event log files in the early morning, usually at 6:00 AM. Schedule the dataflow for a couple of hours after so that the app has the latest data and that the dataflow doesn't interrupt your use of the app. We recommend running the dataflow between 8:00 and 9:00 AM.

- Note: The Event Monitoring Analytics dataflow runs only once when you create the app. Schedule it to run daily so the app uses the latest event data.
- 1. Go to Analytics in the Lightning Platform menu (top right of the Salesforce window) if you're not already there. Open the Data Manager by clicking the gear icon at the upper right of the screen.
- **2.** Select Dataflow view from the menu at the top left of the Data Manager screen.



## **USER PERMISSIONS**

To create and manage Event Monitoring Analytics Apps:

- Access Event Monitoring Analytics Templates and Apps
- Manage Analytics Templated Apps
- Edit Analytics Dataflows

**3.** Find the app you created; you may have to scroll down the page. Open the menu on the far right of the screen next to the app icon and name. Select **Schedule**, and set a time for the dataflow. Select a time outside normal work hours so the dataflow doesn't interrupt business activities. Click **Save**.

## **Event Monitoring Analytics App Prebuilt Dashboards**

The Event Monitoring Analytics App comes with a set of prebuilt dashboards so that you can start exploring your data right away. Data from your org is automatically loaded into your Event Monitoring Analytics App datasets when it's generated.

Most of the dashboards represent a single event type on the EventLogFile object. The EventLogFile object reference contains detailed information about each event type. Two of the dashboards, My Trust and Setup Audit Trail, don't correspond to event types. Let's get a quick idea about what each dashboard does.

#### **Analytics Adoption**

Corresponds to the Wave Change, Wave Interaction, and Wave Performance event types. This dashboard shows Analytics usage and performance information.

#### **Apex Executions**

Corresponds to the Apex Execution event type. This dashboard lets you track trends in Apex code executions and performance.

#### API

Corresponds to the API Event event type. This dashboard gives you information about both your users' API usage and API performance in your org. You can see how often each object is being used, how fast each object is being processed, and what methods are being invoked on that object.

#### **Dashboards**

Corresponds to the Dashboard event type. This dashboard helps you track dashboard adoption and performance.

#### **Files**

Corresponds to the Content Transfer event type. When users in your org perform content transfers (downloads, uploads, or previews), they show up on this dashboard. You can also track file adoption.

#### **Lightning Adoption**

Corresponds to the Lightning Interaction and Lightning Page View event types. Use this dashboard to see how users interact with Lightning Experience on the desktop and mobile devices.

#### **Lightning Performance**

Corresponds to the Lightning Error, Lightning Interaction, Lightning Page View, and Lightning Performance event types. Use this dashboard to optimize performance and user interactions with Lightning Experience and the Salesforce app.

#### Login-As

Corresponds to the Login As event type. This dashboard lets you see which admins are using the login-as feature and on which user accounts.

#### Mv Trust

The My Trust dashboard gives you an overall idea of what kind of events are taking place in your org over time. It also shows the average speed of these transactions.

#### Page Views (URIs)

Corresponds to the URI event type. This dashboard lets you see which pages users are accessing in the Salesforce desktop app.

#### **Report Downloads**

Corresponds to the Report Export event type. This dashboard lets you see which users are downloading your reports and where they're downloading them from.

#### Reports

Corresponds to the Report event type. This dashboard shows you trends in reporting as well as which users are running specific reports. You can also find out which reports are having performance issues.

#### RestAPI

Corresponds to the REST API event type. This dashboard shows you trends in REST API usage and which endpoints are seeing the most traffic. You can also view information about the IP ranges issuing the requests and which methods are being called.

#### **Setup Audit Trail**

Corresponds to the Setup Audit Trail page in Setup. Use this dashboard to see the changes your users are making in the Setup area.

### **User Logins**

Corresponds to the Login event type. This dashboard shows login trends by user and information about where and how users are accessing your org.

## **Visualforce Requests**

Corresponds to the Visualforce Request event type. Here you can see trends in Visualforce adoption and page performance.

## Get to Know Event Monitoring Analytics App Terminology

To make the best use of the Event Monitoring Analytics App, it's helpful to understand the metrics and terms used in the app.

| Term  | Description   |  |
|-------|---|--|
| APT   | Average page time. An aggregate metric across multiple transactions.  |  |
| ЕРТ   | Experienced page time. The timing of a page transaction as seen by the user.  |  |
| Event | A user-initiated interaction in Salesforce. For example, a login, the firing of an API call, or the download of a report. Events are related to the EventLogFile sObject. |  |

# **Campaign Analytics Template**

The Campaign Analytics template uses the power of Einstein Analytics to show how your marketing campaigns impact the bottom line.

Use the Campaign Analytics template to create an app that shows how campaigns translate to revenue. Its Campaign Influence dashboard uses Salesforce data to paint a picture of how your campaigns help to drive business.

You get actionable insight into the return-on-investment of your marketing spend. You can compare performance over time, drill into your regional top performers, and highlight successful campaigns. Also review channels to see which ones are most effective. And use insights from the app to be reallocate marketing dollars to where they can have the most impact.



**Important**: See Create Apps from Any Analytics Template: Start Here on page 616 for general app creation procedures for all Analytics templated apps. The information here provides specifics about creating and using the Financial Advisor Analytics app.

# USER PERMISSIONS To create and manage

To create and manage the Campaign Analytics app:

Manage Analytics
 Templated Apps

To use the Campaign Analytics app:

 Use Analytics Templated Apps

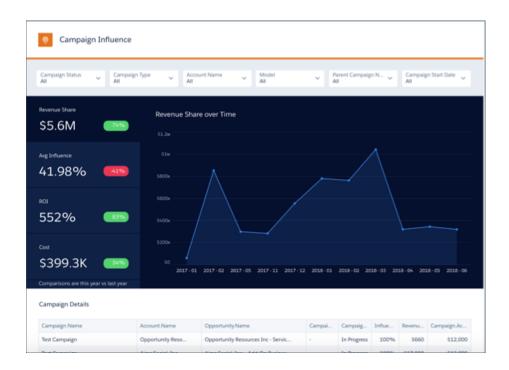
## **Org Requirements**

Your org requires the following before you can create an app from the Campaign Analytics template:

- Make sure you and all app users have the Analytics Platform license.
- Create at least 1 row of data in the customizable Campaign Influence object.

• Set Salesforce field-level security to enable the Analytics Integration User to see the fields you want to analyze. During app creation, Analytics checks your org's field-level security and lets you know if you have to edit it.

## Use Campaign Analytics



- 1. After creating the app, navigate to Analytics Studio.
- 2. Open the app you created using the Campaign Analytics template.
- 3. Click Run App.

The app opens to its Campaign Influence dashboard, which shows a wealth of data visualizations about your campaigns. Use it to do the following:

- Slice and dice campaign metrics such as revenue share and average influence by campaign type, parent campaign, region or any segmentation you might have for campaigns and their related accounts.
- Drill down into a particular campaign type to view its revenue share over time.
- See campaign impact on various regions.
- Take action on campaigns with insufficient return-on-investment.
- Control campaign costs.

# **Change Analytics Template**

Use Change Analytics to visualize field history data in any Salesforce object and learn how, when, and where members of your team change data.

Create an app from the Change Analytics template to bring your historical data to life. Put it to work as is on data from any Salesforce object that uses field history to gain valuable insights about how your team uses an object. Or customize it to meet your exacting specifications.

Its prebuilt dashboard shows which fields change the most, the most common ways fields change, duration between changes, and other key change metrics for the selected object. Customize the dashboard to behave the way you want it to or to add KPIs. Or open the template's dataset to create your own explorations—for example visualizing change trends using a Sankey diagram—and save them into your own dashboards.

(1) Important: See Create Apps from Any Analytics Template: Start Here on page 616 for general app creation procedures for all Analytics templated apps. The information here provides specifics about creating and using the Change Analytics app.

## **USER PERMISSIONS**

To create and manage the Change Analytics app:

 Manage Analytics Templated Apps

To use the Change Analytics app:

 Use Analytics Templated Apps

## **Org Requirements**

Your org requires the following before you can create an app from the Change Analytics template:

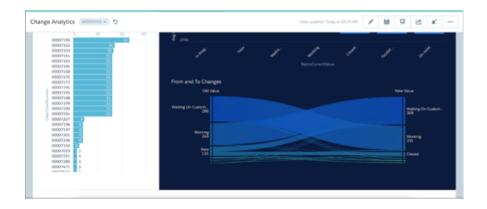
- Make sure you and all app users have the Analytics Platform license.
- The object you analyze must have fields with history tracking enabled and valid history records.
- Set Salesforce field-level security to enable the Analytics Integration User to see the fields you want to analyze.

## The Change Analytics Configuration Wizard

Answer the three questions in the Change Analytics wizard when you create the app.

- 1. Question 1: Select an object. Only objects with history tracking enabled appear here.
- 2. Question 2: Select up to eight fields to track. Only fields from the object selected in Question 1 with valid history records appear here. You can select up to eight fields. Hold down the Shift or Control keys to select multiple fields, depending on your operating system.
- **3.** Question 3: Select up to eight fields. Includes all fields from the object selected in Question 1. The app doesn't track history for these fields, but they do appear in the app's datasets and dashboard filters.

## **Use Change Analytics**



The Change Analytics app includes one prebuilt dashboard called *Change Analytics*. It includes visualizations showing how your team changes the selected object and fields. It also includes two datasets named after the selected object, like so: {Object\_name} and {Object\_name}History.

# The Field Service Analytics App

The Field Service Analytics app brings the power of Analytics to Field Service Lightning on any device that supports Analytics.

With intuitive visualizations based on your field service data, Field Service Analytics provides just-in-time analytics for field service managers and dispatchers. You get clear data insights to improve every on-site experience. Field Service Analytics empowers managers with answers to help their technicians deliver personalized, actionable customer service.



Tip: Follow the steps in the order shown to get started with Field Service Analytics. If you haven't used Analytics before, learn more about it from the *Analytics Documentation*.

#### IN THIS SECTION:

- About the Field Service Analytics App
   Learn the benefits of Field Service Analytics before you create and use the app to help manage field service operations.
- Field Service Analytics Prebuilt Dashboards
   The Fields Service Analytics app includes prebuilt dashboards to accelerate Field Service Lightning data exploration.
- 3. Set Up and Create the Field Service Analytics App
  Set up Field Service Analytics app permissions, make sure your org is enabled to use Field Service Lightning, and assign field level security correctly so you can create and share the app.

## About the Field Service Analytics App

Learn the benefits of Field Service Analytics before you create and use the app to help manage field service operations.

# EDITIONS

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

## **USER PERMISSIONS**

To use Analytics templated apps:

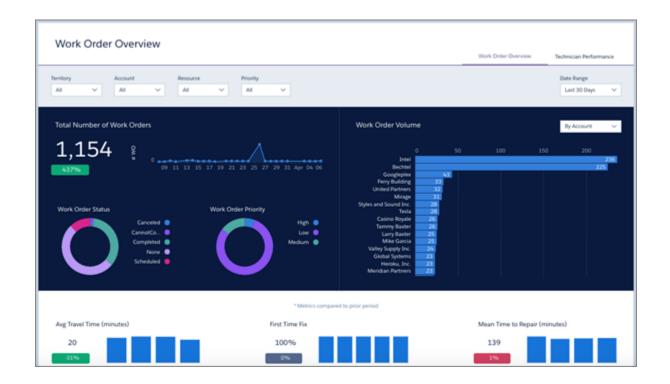
 Use Analytics Templated Apps

To use Field Service Analytics:

 Access Service Cloud Analytics Templates and Apps

To create and manage Analytics apps:

Manage Analytics Templated Apps



Salesforce created the Field Service Analytics app to help service managers analyze customer service data their teams generate when they use Field Service Lightning. The app is bundled with the Service Analytics app.

Important: Your org must be enabled to use Field Service Lightning. Analytics datasets are based on Field Service Lightning's new object model.

We've designed Field Service Analytics to give you just-in-time analytics to optimize the outcome of your field service business. Service managers get a new level of insight into their field service data that they can use to maximize the efficiency of their technical service agents.

Using the app, service managers can access insights to improve every on-site service visit. You gain visibility into mobile workforce utilization, first-time-fix rate, and travel time. Problem detection lets you optimize field technician agent productivity. Performance analysis visualizations help your team prioritize and resolve work orders faster to improve customer satisfaction. Armed with actionable analytics, your agents can deliver personalized, effective customer service.

Analytics automatically creates the app for you based on your Field Service Lightning data. Select the Field Service Analytics template, click Create, and Analytics does the rest. You get actionable insights fast from your field service data using the intuitive Analytics interface. And you can drill deeper into key aspects of service engagements and technician performance by customizing Field Service Analytics around your business needs.

Note: Your organization can use Field Service Analytics with or without the Salesforce Analytics platform by purchasing a Service Analytics license. Each Salesforce Analytics license includes a Service Analytics license.

## Field Service Analytics Prebuilt Dashboards

The Fields Service Analytics app includes prebuilt dashboards to accelerate Field Service Lightning data exploration.

# **USER PERMISSIONS**

To use Analytics apps:

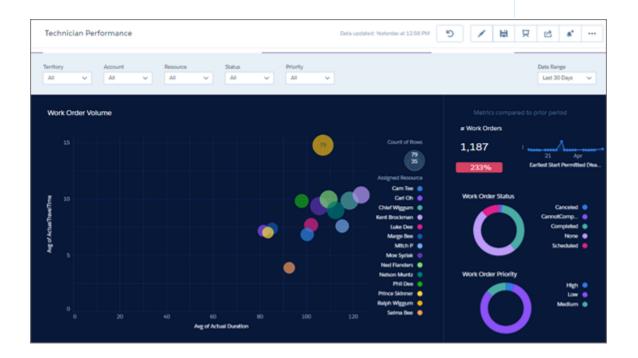
 Use Analytics Templated Apps

To use Field Service Analytics:

 "Access Service Cloud Analytics Templates and Apps"

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- "Edit Analytics Dataflows"



The prebuilt dashboards in the Fields Service Analytics app contain key performance indicators that help you get value from your Salesforce field service data—fast. The dashboards help you understand key elements of customer service work order status and field team performance. You can prioritize customer service engagements, make technician utilization decisions, and quickly drill down to isolate problems and take action. Quickly review first-time fix rates, utilization, SLA compliance, and travel-time analysis. Start from a territory overview of all accounts, products, and teams and zoom into the technician and work order level.

The following table guides you through Field Service Analytics dashboards. You can also explore further on your own at any point. To learn more about exploring data in Analytics, see Explore and Visualize Your Data.

**Table 6: Field Service Analytics Dashboards** 

| Dashboard Name         | Contents   | Target User Role               |
|------------------------|--|--------------------------------|
| Work Order Performance | Service managers start here for a summary of KPIs. Review work order volume, average work time, average travel times, and first-time fix rate. Also review technician agent data, including the number of work orders per technician, their planned and actual travel times, and utilization rates.  | Service manager/dispatcher     |
| Technician Performance | Focuses on each technician's work order volume. Review agent-by-agent work order prioritization, travel time, first-time fix rates, mean time to repair, due date and SLA violations.  | Service manager                |
| Service Resource       | Shows time spent by an individual technician on each type of job so managers can assess technicians' efficiency. Also shows average number of jobs completed by the technician for a specific date range, the worker's first-time fix rate, and actual versus estimated travel times to job sites. Embeddable in technicians' pages so they can monitor their own efficiency KPIs. | Service manager and technician |
| Service Territory      | Service managers can see the types of jobs completed in their territories—for example, HVAC, electrical, or plumbing—to ensure that their team members have the skills they need. They can also see the daily average number of jobs completed, technician utilization rate, and actual versus estimated technician travel times.  | Service manager                |

## Set Up and Create the Field Service Analytics App

Set up Field Service Analytics app permissions, make sure your org is enabled to use Field Service Lightning, and assign field level security correctly so you can create and share the app.

## Set Up Field Service Analytics App Permissions

The Service Analytics license provides access to the Field Service Analytics app. To set up permissions for Field Service Analytics, follow the detailed instructions starting at Set Up Permissions for the Service Analytics App.

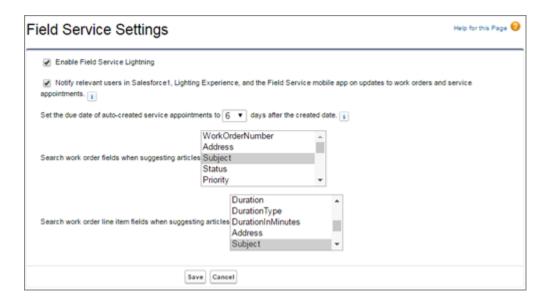
## **USER PERMISSIONS**

To create and manage Analytics apps:

- Manage Analytics
   Templated Apps
- "Edit Analytics Dataflows"

## Make Sure That Field Service Lightning Is Enabled in Your Org

- (1) Important: Important: Your org must be enabled to use Field Service Lightning and its new standard object model to use Field Service Analytics.
- 1. Go to Salesforce Setup.
- 2. Enter Field Service in the Quick Find/Search box. If Field Service Settings appears in Setup, click it.
- 3. In the center window, under Field Service Settings, check to see if the box for Enable Field Service Lightning is checked.



If you're unsure that your org is set up to use Field Service Lightning, contact your Salesforce representative.

### Assign Field Level Security

Before you create Field Service Analytics, set Salesforce field-level security to enable the Analytics Cloud Integration User to see all fields you'd like your app to include. Integration users run the dataflow, and if they don't have proper field-level security permissions, the dataflow can fail. For instructions, see Create and Share the Service Analytics App, Step 2.

## Create Field Service Analytics

Once you've completed the previous setup processes, create Field Service Analytics.

- **1.** Go to Analytics.
- **2.** Click Create in the upper right corner.
- 3. Select the Field Service Analytics template.
- **4.** Name your app and click Create.

Analytics creates your app. This may take a few minutes while Analytics runs a new dataflow and creates the app's dashboards. Refresh your browser, and click the app you just created to see the dashboards.

(1) Important: When users are deactivated, they lose share and delete access to all apps they manage. To avoid "stranding" an app, be sure that manager access is assigned to at least one active user BEFORE deactivating the user who's the manager of the app.

## **Share Field Service Analytics**

Now that you've created the app, share it with users in your organization. You can only share it with users who have the "Use Analytics Templated Apps" and "Access Service Cloud Analytics Templates and Apps" permissions enabled. To share the app, roll your cursor over the icon for the app and click **Share**. Next, type in the names of team members, click **Add**, and click **Save**.

# Financial Advisor Analytics Template

Create an app from the Financial Advisor Analytics template to apply the power of Analytics to data from the Financial Services Cloud.

Financial Advisor Analytics gives you a fast way to get started analyzing the success of your financial services business with Einstein Analytics. Its prebuilt visualizations give financial advisors actionable insights to grow their business by helping deepen client relationships and increase assets under management (AUM). Get instant insights into all your clients so you can align your actions with current client goals. Its key metrics also help you engage new clients using the proper channels, and segment customers so to provide personalized service.

**①** 

**Important**: See Create Apps from Any Analytics Template: Start Here on page 616 for general app creation procedures for all Analytics templated apps. The information here provides specifics about creating and using the Financial Advisor Analytics app.

## **USER PERMISSIONS**

To create and manage the Financial Advisor Analytics app:

 Manage Analytics Templated Apps

To use the Financial Advisor Analytics app:

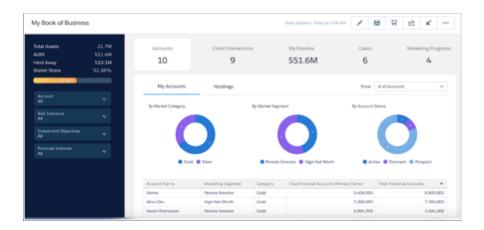
 Use Analytics Templated Apps

## **Org Requirements**

Your org requires the following before you can create an app from the Financial Advisor Analytics template:

- Make sure you and all app users have the Analytics Platform license.
- Install the Financial Service Cloud package.
- Set Salesforce field-level security to enable the Analytics Integration User to see the fields you want to analyze. During app creation, Analytics checks your org's field-level security and lets you know if you have to edit it.
- Create a custom field on the User object with the following attributes:
  - Type: Text
  - Field Label: FSC\_WavePermissions
  - Field Name: FSC\_WavePermissions
  - API name: FSC\_WavePermissions\_\_c
- Edit dataset security settings to create your own explorations. See the Use Financial Advisor Analytics section, below.

## **Use Financial Advisor Analytics**



- 1. After creating the app, navigate to Analytics Studio.
- 2. Open the app you created using the Financial Advisor Analytics template.
- 3. Click Run App.

The app opens to its My Book of Business dashboard, which shows a wealth of data visualizations about your business interactions. Summary metrics include Total Assets, AUM, Held Away, and Wallet Ahare. Filter them by account, risk tolerance, investments objectives, and financial interests. The dashboard includes five views, each of them letting you dig deep into your business metrics:

- Accounts (shown). Toggle between accounts and holdings. View accounts by market category, segment, and status.
- **Client Interactions**. View activities and engagements by status and type as well as according to whether they're completed or upcoming. Also see if interactions relate to onboarding, retention, or prospecting.
- **My Pipeline**. View the pipeline by stage and forecast category and see list of all opportunities. Also review forecast, win rate, and closed won business.
- Cases. View case status as well accounts with cases according to AUM and days since case creation.
- **Marketing Programs**. View campaigns sorted by value or size, type, and status. Also see list of campaign members and clients and prospects to campaigns.

## Datasets

Financial Advisor Analytics also includes seven datasets.

- Account
- Financial Holding
- Case
- Task
- Campaign
- Campaign Member
- Opportunity

To access datasets, be sure security settings are set as follows.

- 1. Make sure you own the records you want to access records. For data in the Campaign Member dataset, you need to own a campaign to see its campaign members.
- 2. Set the value of the User object FSC\_WavePermissions\_\_c field to View All. Be sure to capitalize View All. Log out of Einstein Analytics and log back in to enable the setting.

# **Fundraising Analytics Template**

The Fundraising Analytics template lets you create an app that brings the power of Analytics to data from the Salesforce Nonprofit Success Pack.

Fundraising Analytics gives you a fast way to get started analyzing the success of your fundraising with Einstein Analytics. Optimized for organizations who use the Salesforce Nonprofit Success Pack, the app brings Salesforce donation data from accounts, contacts, and opportunities (donations) into Analytics. You can visualize your donation performance out-of-the-box with its prebuilt dashboards. Or customize them and create your own explorations using the app's datasets to meet your own requirements.

Important: See Create Apps from Analytics Templates: Start Here for general app creation procedures for all Analytics templated apps. The information here provides specifics about creating and using the Fundraising Analytics app.

## **USER PERMISSIONS**

To create and manage the Fundraising Analytics app:

 Manage Analytics Templated Apps

To use the Fundraising Analytics app:

 Use Analytics Templated Apps

## **Org Requirements**

Your org requires the following before you can create an app from the Fundraising Analytics template:

- Make sure you and all app users have the Analytics Platform license.
- Data stored in the Salesforce Opportunities, Accounts objects and at least one task and one event. The Salesforce Nonprofit Starter Pack uses the Opportunities object for donation data. In the app, *opportunities* are called *donations*.
- Set Salesforce field-level security to enable the Analytics Integration User to see all fields used in the app. See Set Field Level Security to Enable Creation of an Analytics Template

## The Fundraising Analytics Configuration Wizard

Fundraising Analytics includes a configuration wizard. Follow these steps to use it.

- 1. Org check page. Analytics checks your org for the data needed to create the app. When the check is done, click **Looks good, next**, and move to the next page. If Analytics detects an issue, it shows an error message. Follow the instructions in the message to fix the problem, and try creating your app again.
- 2. Basic and custom create options page.
  - Use basic create the first time you create Fundraising Analytics or when you want to create the app quickly. Analytics creates the app based on default settings. Select **Basic**, click **Looks good**, **next**, name your app, and click **Create**. Analytics takes a few minutes to create your app. You can see its status on the next page. When it's done, refresh your browser to view the app.
  - Custom app creation gives you more fine-grained control over Fundraising Analytics features and data. To select it, click **Custom**,
    then **Looks good**, **next**, and move to Step 3—the first page of wizard questions. For general guidance on how to use the wizard,
    see How to Answer Analytics Template Custom Wizard Questions.
- 3. Choose additional objects page. The org check from Step 1 checks your org for objects you can add to your app. Based on your selection, Analytics adds wizard questions about how you want to use data from the additional objects. Select the ones you want and click Looks good, next.
- **4. Questions about how Fundraising Analytics uses Accounts data.** Answer the questions on this page about how app dashboards segment customer and geographic data. When you're satisfied with your answers, click **Looks good, next**.
- **5. Questions about how Fundraising Analytics uses Opportunities data.** Answer the questions on this page about the opportunity field that contains total amounts and the field that indicates new business. Remember, *opportunities* are called *donations* in your finished app, after it's created. When you're satisfied with your answers, click **Looks good, next**.
- 6. Questions to enhance the Analytics experience. Answer the guestions on this page, as follows, and clickLooks good, next.

- Question 1: Lets you control user access to data in your app. Here are the available options:
  - Option 1 enforces Salesforce role hierarchy, which means that users can only see data in Opportunities and Accounts owned by them and their subordinates.
  - Option 2 enables team benchmarking. It lets users see data in Opportunities and Accounts owned by them and their subordinates. It also lets users see data from Opportunities and Accounts owned by others at the same level in the role hierarchy.
  - Option 3 lets all users see all Sales Cloud data regardless of role.
- Question 2, mandatory: Select how your app handles Account Team information. Defaults to Option 3, which excludes Account
  Team data. Select Option 1 to add Account Team member data to datasets or Option 2 to add Account Team data and grant
  record visibility to members of the team.
- Question 3, mandatory: Select how your app handles Opportunity Team information. Defaults to Option 3, which excludes
  Opportunity Team data. Select Option 1 to add Opportunity Team member data to datasets or Option 2 to add Opportunity
  Team data and grant record visibility to members of the team.
- Question 4, optional. Only appears if your app detects that you segment opportunities by record types. Choose record types and Analytics excludes *unselected* record types from datasets. Leave this question blank to include *all* record types.
- 7. Questions about adding data to Fundraising Analytics datasets. By default, this page asks you 4 questions about adding data from Accounts, Donations (Opportunities), Users, and Activities to the app. If you added objects to the app in Step 3, questions about adding data from those objects appear here. Select the fields you'd like added to app datasets, and click **Looks good, next**. Then name your app, and click **Create**. Analytics takes a few minutes to create your app. You can see its status on the next page. When it's done, refresh your browser to view the app.

## **Health Cloud Analytics Template**

The Health Cloud Analytics template creates an app that lets healthcare coordinators identify high-risk patients to make sure they get the extra care they need.

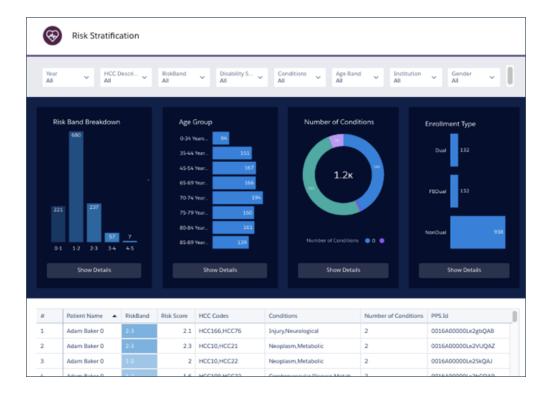
## **USER PERMISSIONS**

To create and manage the Health Cloud Analytics app and set up custom actions in the app:

Manage Analytics
 Templated Apps

To use the Health Cloud Analytics app:

 Use Analytics Templated Apps



Health Cloud Analytics brings your Health Cloud data into Einstein Analytics to help you deliver the right level of care management to high-risk patients. The Patient Care Risk Stratification dashboard lets you drill in to a population. You can see risk score, age, number of conditions, and enrollment type for specific population segments. The metrics help you understand risk for your patients and plan the appropriate level of care to assure best-possible treatment outcomes.

Important: See Create Apps from Analytics Templates: Start Here for general app creation procedures for all Analytics templated

apps. The information here provides specifics about creating and using the Health Cloud Analytics app.

Org Requirements

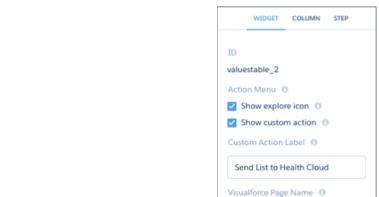
Your org requires the following before you can create an app from the Health Cloud Analytics template:

- Make sure you and all app users have the Analytics Platform license.
- Health Cloud Analytics is only for Health Cloud customers who have installed the Health Cloud Risk Stratification package.
- Your org needs to include at least one risk score within a program patient summary record. You also need to use Record Types.
- Set Salesforce field-level security to enable the Analytics Integration User to see all fields used in the app. See Set Field Level Security to Enable Creation of an Analytics Template

## Enable Bulk Actions in the App

After creating the app, enable bulk actions in the table at the bottom of the Risk Stratification dashboard so you can share high-risk patient reports with others in your org. Bulk actions let you perform an action on multiple Salesforce records at the same time, in this sending a list of high risk patients to other Health Cloud users.

- 1. Click the edit icon at the top of the dashboard.
- 2. Select the table with the list of patients at the bottom of the dashboard.
- 3. In the Properties panel at right, select Widget.



4. Click Show custom action to enable the bulk action. In the Custom Action Label field, enter a name for the custom action, for

example Send List to Health Cloud.

**5.** In the **Visualforce Page Name** field, enter <code>HcWaveListIntegrationPage</code>. This string refers to a Visualforce page that's included with the Health Cloud package.

HcWaveListIntegrationPage

**6.** Click the Save icon at the top of the dashboard, then click the **Save** button.

## Use Health Cloud Analytics

The filters along the top of the dashboard let you select criteria for creating a list of high-risk patients. In the example dashboard shown above, you could select **Diabetes** from the **Conditions** filter and **60-64 Years Old** from the **Age Band** filter to create a list of 60-to-64-year-old patients with diabetes.

The visualizations just below the filters change to show data for the selected group of patients as determined by filter selections. Click the **Show Details** button below each chart to learn more about that group. View the list of patients in the table at the bottom of the dashboard. Click the arrow in the top right corner of the table and select **Send to Health Cloud** to share the list with others in your org.



**Note**: The action may be called something different in your org depending on the name you give it. See the section above, *Enable Bulk Actions in the App*.

# Pipeline Analytics Template

Use Pipeline Analytics to plug your pipeline snapshot data into a ready-made waterfall dashboard. You get instant insight into how the pipeline changes between two snapshots.

Use the Pipeline Analytics template to create a waterfall dashboard from snapshotted pipeline data. You can use a dataset created using the Snapshot Analytics template, another snapshotted Salesforce object, a trended pipeline report, or even a snapshot of a CSV file with pipeline data. The template's configuration wizard takes you through a step-by-step process to make it easy to get a cool waterfall chart showing your pipeline. You don't have to manually import data or create a dashboard from scratch in Analytics Studio. Analytics does the work for you.

1

**Important**: See Create Apps from Any Analytics Template: Start Here on page 616 for general app creation procedures for all Analytics templated apps. The information here provides specifics about creating and using the Pipeline Analytics app.

## **USER PERMISSIONS**

To create and manage the Pipeline Analytics app:

 Manage Analytics Templated Apps

To use the Pipeline Analytics app:

 Use Analytics Templated Apps

## **Org Requirements**

Your org requires the following before you can create an app from the Pipeline Analytics template:

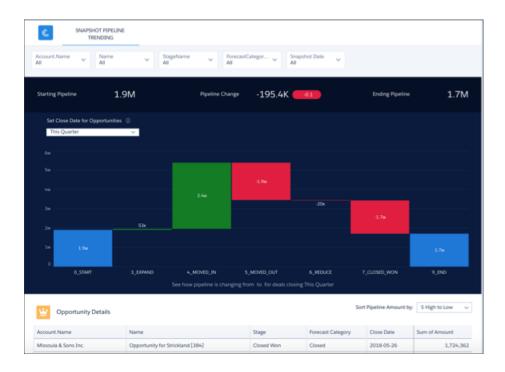
- Make sure you and all app users have the Analytics Platform license.
- A snapshotted dataset with pipeline data. It's recommended that you use the Snapshot Analytics template to snapshot the dataset, but any other snapshotted dataset can work. The source of your data can be any of the following, as long as it's imported to an Analytics dataset:
  - 1. Data from the standard Salesforce Opportunities object.
  - 2. Data from a trended pipeline report.
  - **3.** Data from another standard or custom object.
  - **4.** Data from a CSV or some external tool.
- The dataset you use in the waterfall must include fields that contain the following data or app creation fails.
  - Amount (measure)
  - Is closed (yes/no; boolean)
  - Is won (yes/no; boolean)
  - Unique ID
  - Close date (dimension)
  - Snapshot date

## The Pipeline Analytics Configuration Wizard

Answer the questions in the eight questions in the wizard to select a dataset and fields required to create the waterfall.

- 1. Choose dataset. Choose a snapshotted dataset with your pipeline data. If the dataset doesn't contain pipeline data, the remaining questions don't list the fields required to create the waterfall.
- 2. Select field that contains total amount.
- **3.** Select the dimension field with opportunity close date.
- **4.** Select the boolean field that indicates if an opportunity is open or closed.
- **5.** Select the boolean field that indicates if an opportunity is closed won or closed lost.
- **6.** Select the field that contains the unique idea for an opportunity.
- **7.** Select the field that contains the date of the snapshot date.
- **8.** Select fields to use as filters in the dashboard. Values in those fields appear as filter options at the top of the dashboard. The dashboard also uses field names as column headers in a values table at the bottom of the dashboard. Select up to six fields

## **Use Pipeline Analytics**



Change filter selections in the Pipeline Analytics dashboard to dig deeper into your pipeline. Available filters depend on your selections in the last question of the wizard. Here you can see five of possible six filters, as follows:

- **Account Name**: View pipeline for selected account.
- Name: View pipeline by named opportunity.
- **StageName**: View pipeline by sales stage, such as Closed Won or Closed Lost.
- ForecastCategory: View pipeline by forecast category, such as Best Case, Commit, or Closed.
- Snapshot Date: View pipeline as of a specific date.

If you don't see the filter selections you need to analyze the pipeline, create the app again using different selections in that last wizard question.

# **Quoting Analytics Template**

Create an app using the Quoting Analytics template to get instant insights into your configure-price-quote (CPQ) processes.

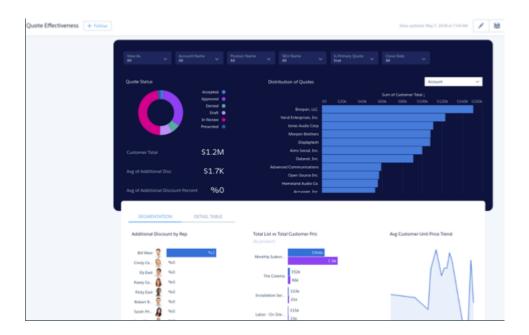
# USER PERMISSIONS

To create and manage the Quoting Analytics app:

 Manage Analytics Templated Apps

To use the Quoting Analytics app:

 Use Analytics Templated Apps



Quoting Analytics gives Salesforce CPQ customers a great way to measure your quoting process's effectiveness across teams, regions, and products. Create the app with just a few clicks to get ready-made dashboards that let you view quotes across all your accounts, uncover bottlenecks, and assess reps' discount practices. You can customize them to meet your team's unique requirements. Or quickly create your own explorations using the app's datasets and save them to your own dashboards.

(1) Important: See Create Apps from Analytics Templates: Start Here for general app creation procedures for all Analytics templated apps. The information here provides specifics about creating and using the Quoting Analytics app.

# **Org Requirements**

Your org requires the following before you can create an app from the Quoting Analytics template:

- Make sure you and all app users, including the Analytics Integration User, have the Analytics Platform and Salesforce CPQ licenses.
- Set Salesforce field-level security to enable the Analytics Integration User to see all fields used in the app. See Set Field Level Security to Enable Creation of an Analytics Template

# Sales Analytics App

The Sales Analytics app brings the power of Analytics to Sales Cloud on any device that supports Analytics. With intuitive visualizations based on your Salesforce data, Sales Analytics lets you move from insight to action quickly and helps you turn data into smarter sales.



Tip: Follow the steps in the order shown to get started with Sales Analytics. If you haven't used Analytics before, learn more about it from the *Analytics Documentation*.

#### IN THIS SECTION:

- 1. About the Sales Analytics App
  Learn the benefits of Sales Analytics before you create and use the app to explore your Sales Cloud data.
- 2. Sales Analytics Prebuilt Dashboards, Lenses, and Datasets

  The Sales Analytics app includes prebuilt dashboards, lenses, and datasets to accelerate your data exploration.

# 3. Set Up Permissions for the Sales Analytics App

Set up your organization to use the Sales Analytics app by enabling Analytics and creating and assigning permission sets.

# 4. Create and Share the Sales Analytics App

Follow these steps to create Sales Analytics and start uncovering the value of your Salesforce data.

#### 5. Customize Sales Analytics with the Configuration Wizard

Create Sales Analytics with the configuration wizard so the app reflects how your company prefers to view Salesforce data.

#### 6. Delete the Sales Analytics App

Delete apps to start app creation all over or to get rid of apps you no longer use.

#### 7. Upgrade the Sales Analytics App

Take advantage of the latest Sales Analytics features by upgrading your app whens we release a new version.

#### 8. Reconfigure the Sales Analytics App

To restore deleted or altered dashboards or change wizard settings, reconfigure an existing app.

# 9. Collaborative Forecasting and Quotas Data in Sales Analytics

Sales Analytics gives you a choice for how to include your team's quotas depending on whether you use the Sales Cloud Collaborative Forecasts feature to store quotas data.

# 10. Schedule the Sales Analytics Daily Dataflow

Schedule a daily dataflow at a time outside standard business hours before you start exploring with Sales Analytics.

# 11. Integrate Sales Analytics With Salesforce

Make Sales Analytics more usable by performing a variety of optional integrations and customizations.

#### 12. Understand Sales Analytics App Limitations

Sales Analytics requires that Sales Cloud include specific data and supports a limited set of Salesforce objects.

#### 13. Get to Know Sales Analytics Data Terminology

To make the best use of Sales Analytics, it's helpful to understand the metrics and terms used in the app.

# About the Sales Analytics App

Learn the benefits of Sales Analytics before you create and use the app to explore your Sales Cloud data.

# EDITIONS

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To use Analytics templated apps:

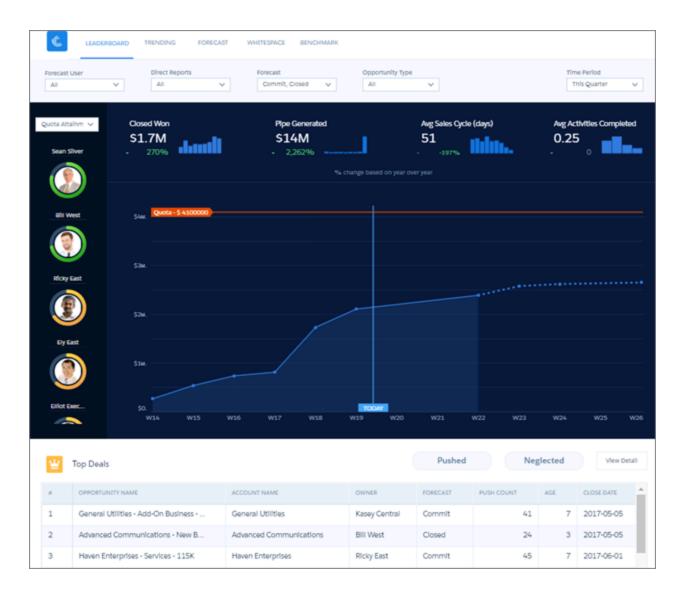
 Use Analytics Templated Apps

To use Sales Analytics:

 Access Sales Cloud Analytics Templates and Apps

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- Edit Analytics Dataflows



(1) Important: Each Salesforce Analytics platform license includes a Sales Analytics App license. Licenses for individual Analytics apps do not provide the complete capabilities available to Salesforce Analytics platform license holders. See Understand Sales Analytics App Limitations for details.

Salesforce created the Sales Analytics app to make it easy to analyze Sales Cloud data. Whether you're a sales executive or manager, a rep, or on the operations side, Sales Analytics gives you a new level of insight into your Salesforce data. Start with the Sales Analytics Home dashboard to see the latest wins, win rate, average deal amount. Dig in to all the other dashboards from there, which take advantage of Sales Cloud Collaborative Forecasts to show quotas and help you pinpoint forecasting.

- Execs get their own overview highlighting pipeline and sales and service business performance as well as top deals. They can easily jump to dashboards with all the details.
- Managers can start with a leaderboard showing team key performance indicators (KPIs) and dive right in to specifics about quota, changes in the pipeline, team trending, and average sales cycle time. They can also focus on the performance of members of their team and take action to accelerate business closings.
- Reps can view their own quota attainment, bookings, and pipe activities for a given period. They can also quickly find opportunities for new business to help hit their quotas.
- Operations staff can sort through performance by geography, source, and customer to spot trends to help speed new deals.

App creation is easy. Sales Analytics runs a compatibility check against your org to be sure it includes all the data to create the app's datasets and dashboards. If your org doesn't have the required data, error messages tell you what you need to add before creating the app.

Once the compatibility check determines that your org is ready, you have two options:

- Quickly create the app using standard, default settings as determined by Sales Analytics during the compatibility check. Default settings include collaborative forecasting data to show quotas in app dashboards if your org uses the Sales Cloud Collaborative Forecasting feature.
- Use the built-in configuration wizard to choose your own, custom settings to reflect the way you and others on your team want to view data.

Once you've created the app, use its prebuilt dashboards to explore Sales Cloud data from any device that supports Analytics.

You get actionable insights fast from your sales data using the intuitive Analytics interface. And you can drill deeper into key aspects of your business by customizing Sales Analytics around your business needs.

# Sales Analytics Prebuilt Dashboards, Lenses, and Datasets

The Sales Analytics app includes prebuilt dashboards, lenses, and datasets to accelerate your data exploration.

The prebuilt dashboards in the Sales Analytics app contain key performance indicators (KPIs) that help you get value from your Salesforce data—fast. The dashboards let you manage pipeline, visualize quotas data, and fine-tune forecasts. They also help you understand key business performance drivers, visualize trends, and assign actions. You get fast answers to questions you have about business results.

The app also includes lenses—more narrowly focused visualizations that augment dashboards with greater detail about your sales KPIs. Additionally, when you create Sales Analytics, the app automatically creates datasets based on your existing Salesforce data in the Sales and Service clouds. The dashboards and lenses use data from those datasets to visualize your KPIs to give you the insights you need to run your business.

You can create your own lenses and dashboards using the data in Sales Analytics datasets. To learn more about exploring data in Analytics, see Explore and Visualize Your Data.



**Note:** The dashboards and datasets included in Sales Analytics differ depending on how you answer configuration wizard questions when you create the app.

# **USER PERMISSIONS**

To use Analytics apps:

 Use Analytics Templated Apps

To use Sales Analytics:

 Access Sales Cloud Analytics Templates and Apps

To create and manage Analytics apps:

- Manage Analytics
   Templated Apps
- Edit Analytics Dataflows

#### IN THIS SECTION:

#### Sales Analytics Dashboard Guide

The Sales Analytics app includes prebuilt dashboards to meet the needs of everyone on the team. Sales executives, managers, and representatives as well as the operations staff all have instant access to the KPIs they need to manage the sales business.

#### Sales Analytics Lenses

Sales Analytics app lenses augment app dashboards with targeted visualizations of your org's sales data.

#### Sales Analytics Datasets

When you create the Sales Analytics app, Analytics imports your Salesforce data into app datasets based on your wizard selections. The datasets drive the app's dashboards and lenses.

# Sales Analytics Dashboard Guide

The Sales Analytics app includes prebuilt dashboards to meet the needs of everyone on the team. Sales executives, managers, and representatives as well as the operations staff all have instant access to the KPIs they need to manage the sales business.



**Note**: The dashboards included in Sales Analytics differ depending on how you answer configuration wizard questions when you create the app.

# General Purpose and Embedded Dashboards

- Sales Analytics Home
- Account (Embedded)
- Opportunity (Embedded)
- Sales Overview Home (Embedded) on page 658

# Dashboards for Sales Managers

- Forecast
- Leaderboard
- Team Activities
- Team Benchmark
- Team Trending
- Team Whitespace

# Dashboards for Sales Representatives

- Sales Overview Home (Embedded) on page 658
- Accounts on page 673
- Sales Rep Overview
- Trending
- Whitespace (individual)

#### Dashboards for Sales Executives

- Executive Overview Pipeline Performance
- Executive Overview Sales Performance
- Executive Overview Service Performance

# Dashboards for Sales Operations

- Company Overview
- Company Trending
- Lead Analysis
- Sales Performance (Operations)
- Sales Stage Analysis

# **USER PERMISSIONS**

## To use Analytics apps:

 Use Analytics Templated Apps

# To use Sales Analytics:

 Access Sales Cloud Analytics Templates and Apps

# To create and manage Analytics apps:

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

#### IN THIS SECTION:

# 1. Sales Analytics Home Dashboard

Start exploring Sales Analytics with an overview of top-level year-to-date key performance indicators (KPIs).

# 2. Sales Analytics Account Dashboard (Embedded)

Get a snapshot of an account, including its average sales cycle, opportunity amount, and win rate. The dashboard is intended for use when embedded in a Salesforce account or opportunity page.

#### 3. Sales Analytics Opportunity Dashboard (Embedded)

Get a summary of an opportunity. You embed the dashboard in a Salesforce opportunity page.

# 4. Sales Analytics Sales Overview Home (Embedded)

Designed to be embedded in the Lightning Home page, the dashboard lets sales reps see their KPIs the second they log into Salesforce. They can also quickly access the Sales Analytics dashboards that matter most to them.

## 5. Sales Analytics Forecast Dashboard

View quota attainment and forecast for each member of the team, and fine-tune the forecast by reviewing opportunities by stage in a selected period.

#### 6. Sales Analytics Leaderboard Dashboard

Gives sales leaders an overview of team and individual rep performance, including quota attainment, pipe coverage, bookings, pipe generation, closed won business, average sales cycle time, and sales activities.

# 7. Sales Analytics Team Activities Dashboard

See what your team's been doing to keep on top of opportunities. Look at their total, completed, and overdue tasks and review each member's calls, events, emails, and tasks.

#### 8. Sales Analytics Team Benchmark Dashboard

Shows a ranking of sales rep results across your team's KPIs, such as closed won deals, best case, and average deal size. Also shows each rep's performance against team average.

# 9. Sales Analytics Trending Dashboards

View company, team, and pipeline changes for a given period, including beginning and end values of the pipe as well as what's moved in and out.

# 10. Sales Analytics Team Whitespace Dashboard

Use this dashboard to uncover resell and upsell opportunities by viewing whitespace. Whitespace means accounts that you can revisit to create new business.

## 11. Sales Analytics Sales Rep Accounts Dashboard

A snapshot of opportunity, case, and activity trends to help sales reps stay on top of all their accounts.

#### 12. Sales Analytics Sales Rep Overview Dashboard

Sales reps: start here to see the status of opportunities you own and get ideas for the quickest ways to make quota. Review quota attainment, bookings, and pipeline for a given time period. Also uncover key opportunities for accelerating deal closing and review the number of activities you've completed in the selected period.

# 13. Sales Analytics Executive Overview – Pipeline Performance Dashboard

Sales executives get instant pipeline status. You can view the current amount in the pipe, comparison to the previous period, projected closing, and top deals by lead source, product, account, and region. Also get top-level views of sales and service performance.

#### 14. Sales Analytics Executive Overview – Sales Performance Dashboard

Sales executives get instant insight into closed business and quickly recognize trends. See bookings for the period, changes from previous period, as well as win rate, lead conversion rate, and top deals. Also see top-level views of pipeline and service business.

# 15. Sales Analytics Executive Service Performance

Sales executives get instant insight into customer service performance. See average case duration for a selected period compared with previous periods and case duration by account, service channel, and geography.

# 16. Sales Analytics Company Overview Dashboard

Intended to give sales leaders and operations staff high in the corporate hierarchy an overview of the sales business and operations.

#### 17. Sales Analytics Lead Analysis Dashboard

Boost operational efficiency by taking a close look at your team's lead conversions. Quickly identify leads that convert the most quickly and visualize the team's conversion rate. And get a view into top leads by source and region.

# 18. Sales Analytics Sales Performance Dashboard (Operations)

Sales leaders: Drill into your closed business by geography, account, product, source, or other criteria to get a 360-degree view of the team's operational efficiency.

#### 19. Sales Analytics Sales Stage Analysis Dashboard

Shows how deals move through stages of the sales process and if deals are moving smoothly. Also reveals bottlenecks and exposes at-risk opportunities.

# Sales Analytics Home Dashboard

Start exploring Sales Analytics with an overview of top-level year-to-date key performance indicators (KPIs).

# **USER PERMISSIONS**

To use Analytics apps:

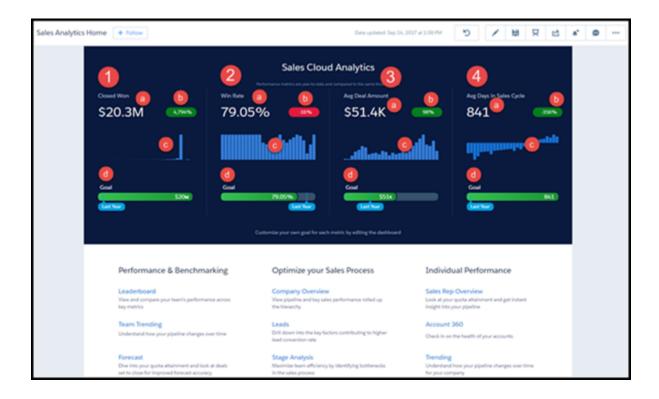
 Use Analytics Templated Apps

To use Sales Analytics:

 Access Sales Cloud Analytics Templates and Apps

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- Edit Analytics Dataflows



# **Default Behavior and Recommended Options**

Get an overview of your sales business for your current fiscal year, including comparisons to the previous year and the team's progress against goals. Includes closed won, win rate, average deal amount, and average days in the sales cycle. Also, follow links to see all the app's other dashboards and KPIs. All KPIs are based on row visibility settings defined in the Opportunities dataset.

Customize the goal for each metric by editing the dashboard:

- 1. With the dashboard open in Analytics Studio, click the edit icon to open the designer.
- 2. Click the Goal widget.
- 3. In the properties panel on the right, expand **Breakpoints**. Then change **Max** to the goal you'd like to use.
- **4.** Save the dashboard.

# **Wizard and Other Setup Options**

Closed Won (1) and Avg Deal Amount (3) KPIs use amounts from the field selected for opportunity amount, wizard Page 5, Question 1. All other KPIs based on standard fields that can't be changed.

Supports Opportunity Splits if the feature is enabled in your org. See Opportunity Splits.

#### **Datasets Used**

Opportunities.

#### **KPI Calculations**

#### Closed Won (1)

- Total (a). Total closed won year-to-date (YTD) based on Opportunity.lsWon = true.
- Comparison (b). (Total closed won YTD Total closed won same time last year) / Total amount closed won YTD.
- Over time (c). Total closed won by month for past 3 years.
- Goal (d). Total closed won this year vs. last year.

#### Win Rate (2)

- Total (a). Total won YTD / Total closed won or lost YTD.
- Comparison (b). (Win rate YTD Win rate last YTD) / Win rate last YTD.
- Over time (c). Win rate by month for past 3 years.
- Goal (d). Total won YTD / Total closed won or lost YTD vs. same for last year.

# Avg Deal Amount (3)

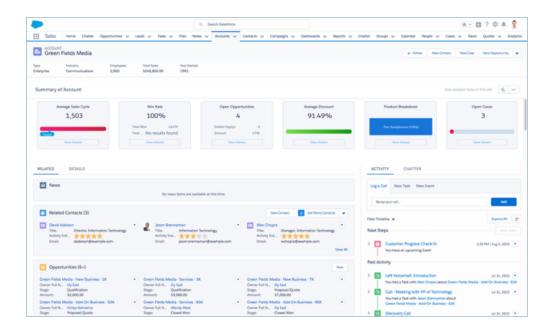
- Total (a). Average amount for won deals YTD.
- Comparison (b). (Average amount for won deals YTD Average amount for won deals last YTD) / Average amount for won deals last YTD.
- Over time (c). Average amount for won deals by month for past 3 years.
- Goal (d). Average deal size YTD vs. same for last year.

# Avg Days in Sales Cycle (4)

- Total (a). Average won opportunity (Opportunity CloseDate CreatedDate) for YTD.
- Comparison (b). (Average cycle YTD Average cycle last YTD) / Average cycle last YTD.
- Over time (c). Average days to complete (win) sales cycle each month for past 3 years.
- Goal (d). Average cycle YTD vs same for last year.

# Sales Analytics Account Dashboard (Embedded)

Get a snapshot of an account, including its average sales cycle, opportunity amount, and win rate. The dashboard is intended for use when embedded in a Salesforce account or opportunity page.



# **Default Behavior and Recommended Options**

Embed the dashboard in either Lightning and Aloha page layouts.

Edit the dashboard to set target lines and set the upper bounds for gauges. With the dashboard open in Analytics Studio, click the edit

icon to open the designer, then click the widget you want to edit. Then look for the value you want to change in the properties panel on the right and change it there. Save the dashboard.

#### **Wizard and Other Setup Options**

Average Discount and Breakdown by Product widgets. Only included if you select Products on the wizard page that lets you add objects to the app. Otherwise it includes two activities widgets.

Cases widget. Only included if you select Cases on the wizard page that lets you add objects to the app.

If your org uses account hierarchy, the dashboard can be embedded so that all child account KPIs roll up into KPIs for the parent.

# **Embedding Syntax**

Here's the syntax for embedding the dashboard in either Salesforce Classic or Lightning Experience pages. Note the difference between using a filter for single accounts or account hierarchy. Opportunity is the developer name for the opportunity dataset. Use the exact developer name of the dataset when embedding the dashboard.

#### **Salesforce Classic**

Embedding the dashboard in the Account page layout.

Here's the syntax to filter by a single account:

Here's syntax to filter using account hierarchy. Roll ups include KPIs for the account and its child accounts:

```
{"datasets": { "opportunity": [{"fields": ["Account.Parent.AccountParents"] , "filter": {
"operator": "in",
          "values": ["$Id"] } } ]}}
```

Embedding the dashboard in the Opportunity page layout.

Here's the syntax to filter by a single account:

```
{"datasets": { "opportunity": [{"fields": ["AccountId"] , "filter": { "operator": "in",
"values":
          ["$AccountId"] } } ]}}
```

Here's syntax to filter using account hierarchy. Roll ups include KPIs for the account and its child accounts:

```
{"datasets": { "opportunity": [{"fields": ["Account.Parent.AccountParents"] , "filter": {
"operator": "in",
          "values": ["$AccountId"] } } ]}}
```

#### Lightning Experience



Note: Syntax for Lightning Experience uses single quotes instead of double quotes.

Embedding the dashboard in the Account page layout.

Here's the syntax to filter by a single account:

```
{'datasets': { 'opportunity': [{'fields': ['AccountId'] ,'filter': { 'operator': 'in',
'values': ['$Id'] } }
      1 } }
```

Here's syntax to filter using account hierarchy. Roll ups include KPIs for the account and its child accounts:

```
{'datasets': { 'opportunity': [{'fields': ['Account.Parent.AccountParents'] ,'filter': {
'operator': 'in', 'values':
          ['$Id'] } } ]}}
```

Embedding the dashboard in the Opportunity page layout.

Here's the syntax to filter by a single account:

```
{'datasets': { 'opportunity': [{'fields': ['AccountId'] ,'filter': { 'operator': 'in',
'values': ['$AccountId'] } }
       1 } }
```

Here's syntax to filter using account hierarchy. Roll ups include KPIs for the account and its child accounts:

```
{'datasets': { 'opportunity': [{'fields': ['Account.Parent.AccountParents'] ,'filter': {
'operator': 'in', 'values':
          ['$AccountId'] } } ]}}
```

# **KPI Calculations**

#### **Default Widgets**

- Average Sales Cycle. Average of opportunity close date Created date for won opportunities for life of account.
- Win Rate. Total won/ Total closed (won or lost) for life of account.
  - Total Won. Total won for life of account.

- Total Lost. Total lost for life of account.
- Open Opportunities. Open opportunities with any close date for the account.
  - Count. Total count of open opportunities with any close date for the account.
  - Push. Total number of open opportunities for the account that have been pushed at least once.

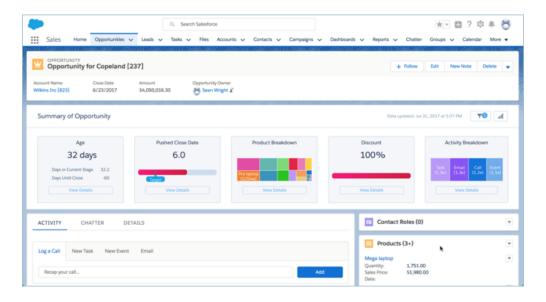
# **Optional Widgets**

Analytics creates these widgets depending on selections you make on the wizard page that lets you add objects to the app.

- Average Discount. 1 (Product total price for all products sold to account / Product list price). Only appears if you add Products.
- Product Breakdown. Sum of product total price grouped by product. Only appears if you add Products.
- Number of Open Activities. (Not shown.) Count of open tasks and events related to account. Only appears if you add Products.
- Number of Overdue Activities. (Not shown.) Count of overdue tasks related to account. Only appears if you do not add Products.
- Open Cases. Number of open cases related to account. Only appears if you add Cases.

Sales Analytics Opportunity Dashboard (Embedded)

Get a summary of an opportunity. You embed the dashboard in a Salesforce opportunity page.



#### **Default Behavior and Recommended Options**

**Ø** 

Note: This dashboard is only included if Sales Wave is set up to include products. See Wizard and Other Setup Options.

Embed the dashboard in either Lightning and Aloha page layouts.

Edit the dashboard to set target lines and set the upper bounds for gauges. With the dashboard open in Analytics Studio, click the edit

icon to open the designer, then click the widget you want to edit. Then look for the value you want to change in the properties panel on the right and change it there. Save the dashboard.

#### **Wizard and Other Setup Options**

To add this dashboard to your app, select Products on the wizard page that lets you add objects to the app.

# **Datasets Used**

- Opportunity Products
- Activities

# **Embedding Syntax**

Here's the syntax for embedding the dashboard in either Salesforce Classic or Lightning Experience Opportunity page layout. Note the difference between using a filter for single accounts or account hierarchy. Opportunity is the developer name for the opportunity dataset. Use the exact developer name of the dataset when embedding the dashboard.

#### Salesforce Classic

```
{"datasets": { "opportunity": [{"fields": ["Id"] ,"filter": { "operator": "in", "values": ["$Id"] } } ]}}
```

# **Lightning Experience**



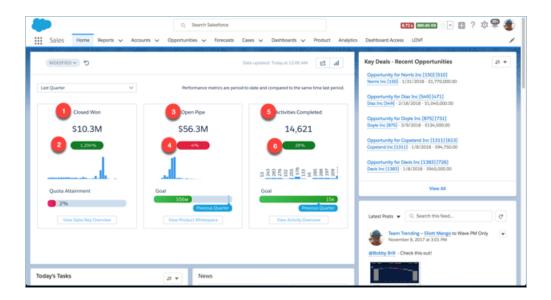
Note: Syntax for Lightning Experience uses single quotes instead of double quotes.

#### **KPI Calculations**

- Age. Number of days opportunity has been open; Today's date Created date.
- Days in Current Stage. (Not shown.) Number of days the opportunity has spent in the current stage.
- Days until Close. (Not shown.) Expected close date today's date
- Pushed Close Date. Number of times the close date has been pushed into the future.
- Product Breakdown. Grouping of product names according to product total price.
- Discount. (Product total price for all products attached to the opportunity/ Product list price)
- Activity Breakdown. Number of Activities (open or closed) broken down by activity type.

Sales Analytics Sales Overview Home (Embedded)

Designed to be embedded in the Lightning Home page, the dashboard lets sales reps see their KPIs the second they log into Salesforce. They can also quickly access the Sales Analytics dashboards that matter most to them.



#### **Default Behavior and Recommended Options**

Embed the dashboard in the Lightning Home page using the Lightning App Builder without using any filter syntax. By default, data is filtered to show data for the rep viewing the dashboard. You see only opportunities and activities that you own.

Edit the dashboard to set target lines and the upper bounds for gauges. With the dashboard open in Analytics Studio, click the edit icon

to open the designer, then click the widget you want to edit. Look for the value you want to change in the properties panel on the right and change it there. When you're done, save the dashboard.

Click View Sales Rep Overview, View Product Whitespace, and View Activity Overview to open other dashboards.

#### **Wizard and Other Setup Options**

The **View Product Whitespace** button appears and links to the Whitespace dashboard only if you select Products on the wizard page that lets you choose to add objects. Otherwise, you see a **View Pipeline Trending** button, which links to the Trending dashboard.

#### **Datasets Used**

- Opportunities
- Opportunity Splits (if you add Opportunity Splits to the app on the wizard page that lets you add objects)
- Pipeline Trending
- Activities

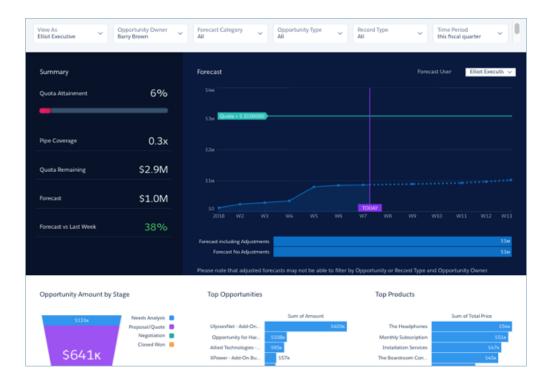
#### **KPI Calculations**

- Closed Won (1). Total amount closed won opportunities in the selected period.
- Closed Won comparison (2). (Total amount closed won opportunities in the selected period Total closed won opportunities in the previous period) / Total closed won opportunities in the previous period.
- Open Pipe (3). Total amount of open opportunities with close dates within the selected period.

- Open Pipe comparison (4). (Total open pipe in the selected period Total open pipe in the previous period) / Total open pipe in the previous period. The amount of open pipe in the previous period is based on data from the same day of the previous period. For example, if the period is *this month*, the amount is for the same day for the previous period minus 1 month.
- Activities Completed (5). Total number of activities completed in the selected period.
- Activities Completed comparison (6). (Total number of activities completed in the selected period Total number of activities completed in the previous period) / Total number of activities completed in the previous period.

# Sales Analytics Forecast Dashboard

View quota attainment and forecast for each member of the team, and fine-tune the forecast by reviewing opportunities by stage in a selected period.



#### **Default Behavior and Recommended Options**

If your org uses the Sales Cloud Collaborative Forecasts feature, the dashboard shows opportunity forecast and forecasts with manager adjustments. Historical opportunity data draws from the standard Opportunity Amount field.

Select from the Forecast User filter to view forecast for each team member.

Change the Time Period filter to Next Month or Next Quarter to identify possible opportunities to move into the current period. When you choose other categories from the Forecast Category filter, the Pipe Coverage metric changes accordingly.

#### **Wizard and Other Setup Options**

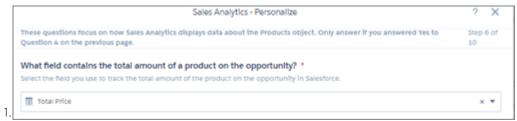
**View As filter.** If Salesforce is set up to use the Sales Cloud Collaborative Forecasts feature, the filter shows forecast user names. If your org doesn't use Collaborative Forecasts, filter shows role developer names. In either case, pipe rolls up to the selected user. If your org doesn't use Salesforce role hierarchy, this filter does not appear.

**Opportunity Type filter**. Values shown determined by selection made in wizard page 5, question 3. By default, the filter uses the standard Opportunity Type field.



**Quotas**. Dashboard automatically includes quota information from Sales Cloud Collaborative Forecasts Quotas if your org uses this feature. If it does not, you can manually upload quotas data into the app from an external tool as a CSV file. See Collaborative Forecasting and Quotas Data in Sales Analytics.

**Products**. Dashboard includes products if you include products (opportunity line items) when you create the app. Top products are sorted by the product amount selected in the wizard, page 6, question



**Opportunity Details chart**. Amount column changes to Schedule Amount, Close Date column changes to Schedule Date if you select Product Schedules on page that lets you add data to the app.

Supports Opportunity Splits if the feature is enabled in your org. See Opportunity Splits.

#### **Datasets Used**

- Opportunities (or Opportunity Splits)
- Users
- User Allocation
- Forecasting Item (if org uses Collaborative Forecasts)
- Oppty Products (if you set up app with products)
- Pipeline Trending (for Forecast last week comparison)

# **KPI Calculations**

# **Filters at Top**

- View As. Role developer names or forecast managers, depending on how app is set up.
- Opportunity Owner. Any user who has ever owned an opportunity, including inactive users or users who do not own any deals in the selected period.
- Forecast Category. Values from standard opportunity forecast category field.
- Opportunity Type. Values from standard opportunity type field, or another field selected during app setup.
- Record Type. Opportunity record type names defined in your org.
- Time Period. Based on Salesforce fiscal year settings.

#### **Summary (Top Left Panel)**

- Quota Attainment. Closed won / Quota amount per opportunity owner based on close date and quota date in selected period. May include future closed opportunities.
- Pipe Coverage. Open pipeline/ Remaining quota per opportunity owner based on selected period. Comparisons are to date. Does not include future closed opportunities.
- Quota Remaining. Quota amount Closed won based on close date and quota date in selected period.
- Forecast. Closed won + Amount of categories selected in Forecast Category filter. May include opportunities set to close outside of selected period.
- Forecast vs Last Week. Current opportunity forecast amount for categories selected in Forecast Category filter compared with historical opportunity amount for the same categories.

# Forecast (Top Right Panel)

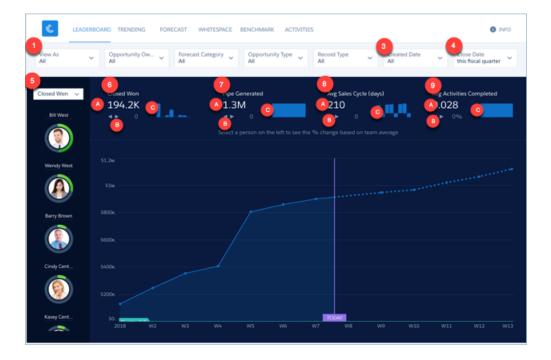
- Forecast. Cumulative forecast for categories selected Forecast Category filter. Based on opportunity close date within selected period.
- Forecast No Adjustments/Forecast including adjustments. Total opportunity amount of forecast for categories selected Forecast Category filter compared with adjusted forecast for user selected in Forecast User filter.

#### **Charts at Bottom**

- Opportunity Amount by Stage. Opportunities grouped by stage based on close dates within selected period and other values selected in filters
- Top Opportunities. Total amount open for selected opportunity owner based on close date in selected period.
- Top Products. Top products based on total product amount for all opportunities in forecast.

# Sales Analytics Leaderboard Dashboard

Gives sales leaders an overview of team and individual rep performance, including quota attainment, pipe coverage, bookings, pipe generation, closed won business, average sales cycle time, and sales activities.



# **Default Behavior and Recommended Options**

The Leaderboard gives a quick overview of team performance for a given time period. View results for the entire team or for any of your subordinates. The team is made up of sales reps that roll up to the user selected in the **View As** filter (1), depending on the configuration of the app. (See below under Wizard and Other Setup Options.)

Select a key performance indicator (KPI) at the top of the left column (2) to view a stacked ranking of your team according to that KPI. Examples of KPIs include the following:

- Quota progress.
- Pipe coverage.
- Open pipe.
- Pipe generated.
- Remaining quota.
- Closed won.
- Completed activities.
- Average sales cycle.

Change the **View As** filter (1) and view KPIs from that user's perspective.

The leaderboard column on the left (5) displays opportunity owners only. It does not roll up metrics up the role hierarchy; the Company Overview dashboard provides that view.

# **Wizard and Other Setup Options**

**Quotas.** Dashboard automatically includes quota information from Sales Cloud Collaborative Forecasts Quotas if your org uses this feature. If it does not, you can manually upload quotas data into the app from an external tool as a CSV file. See Collaborative Forecasting and Quotas Data in Sales Analytics on page 712.

**Opportunity Type filter**. Values shown determined by selection made in wizard page 5, question 3. By default, the filter uses the standard Opportunity Type field.



Close Date filter. Changes to schedule date if you select Product Schedules on page that lets you add data to the app.

**View As filter**. Contents of this filter depend on your org:

- If your org uses the Sales Cloud Collaborative Forecasts feature, the filter lists forecasting managers as defined by the forecast hierarchy.
- If your org defines a role structure/hierarchy but doesn't use Collaborative Forecasts, the filter lists manager roles as defined by the hierarchy.
- If your org does not define role hierarchy, the filter lists opportunity owners.

**Top Deals details chart**. Amount column changes to Schedule Amount, Close Date column changes to Schedule Date if you select Product Schedules on page that lets you add data to the app.

Closed won and quota amounts calculated based on the amount field selected in the wizard, Page 5, Question



Supports Opportunity Splits if the feature is enabled in your org. See Opportunity Splits.

#### **Datasets Used**

- Opportunity
- User Allocation
- Activities
- User
- Opportunity Splits (if you select Opportunity Splits on the wizard page that lets you add objects)

#### **KPI Calculations**

# Top of Chart

- Closed Won (6a). Total amount closed won during selected time period. May include future closed opportunities.
- Closed Won comparison (6b). (Total amount closed based on selected user in View As filter Average total amount closed by team) / Average total amount closed by team. Team defined by all opportunity owners.
- Closed Won over time (6c). Total amount closed won by quarter for past eight quarters
- Pipe Generated (7a). Based on selections from Created Date (3) and Close Date (4) filters. For example, to see what pipe is generated this period and closes any time, set Created Date (3) to this fiscal quarter and Close Date (4) to all time.
- Pipe Generated comparison (7b). (Total pipe created by selected user in View As filter Average total pipe created by team) / Average total pipe created by team.
- Pipe Generated over time (7c). Win rate by month for past three years.
- Avg Days in Sales Cycle (8a). Average of opportunity close date created date for won opportunities year to date.
- Avg Days in Sales Cycle comparison (8b). (Average cycle for selected user in View As filter Average cycle by team) / Average cycle by team..
- Avg Days in Sales Cycle over time (8c). Average days to complete (win) sales cycle in the selected period
- Avg Activities Completed (9a). Average number of activities completed per team member in selected time period. Team made
  up of opportunity owners included in role selected in View As filter (1).
- Avg Activities comparison (9b). (Average cycle for selected user in View As filter Average cycle by team) / Average cycle by team.
- Avg Activities over time (9c). Activities completed per quarter.

#### Upper-Left Filter Options (5)

- Closed Won. Total amount closed won as of close date in selected period per opportunity owner.
- Open Pipe. Total amount open as of close date in selected period per opportunity owner.
- Quota Attainment. Closed won / Quota amount per opportunity owner as of close date and quota date in selected period.
- Remaining Quota. Quota amount Closed won as of close date and quota date in selected period.
- Pipe Generated. Total amount of opportunities created since created date in selected period per opportunity owner.

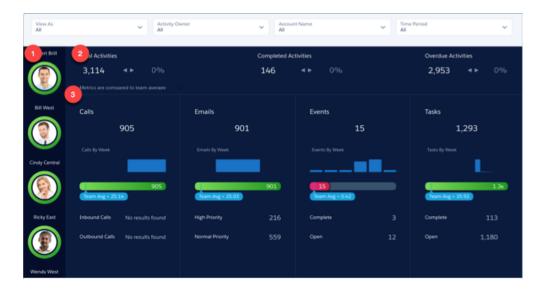
- Avg Sales Cycle. Average sales cycle since created date in selected time period per opportunity owner.
- Activities Completed. Number of activities completed in the selected time period per opportunity owner.
- Pipe Coverage. Open pipeline / Remaining quota per opportunity owner in selected period. Values selected in Forecast Category filter impact open pipeline calculation.

# Top Deals (open opportunities) table (not pictured)

- Pushed. Number of times an opportunity close date has been pushed to a future date. Only shows opportunities in the table
  for which the closed date has been pushed into the future at least once.
- Neglected. Opportunities that have not been touched for 60 days. Time period can be changed by editing app dataflow.

# Sales Analytics Team Activities Dashboard

See what your team's been doing to keep on top of opportunities. Look at their total, completed, and overdue tasks and review each member's calls, events, emails, and tasks.



#### **Default Behavior and Recommended Options**

Measure team and individual activity based on Salesforce tasks and events data. Start by looking at total, completed, and overdue tasks for your entire team. Select team members in the panel on the left (1) to see their individual activities and review their calls, events, emails, and tasks. Also see how their level of activity compares to the team average.



Note: The dashboard does not yet support Einstein Activity Capture.

#### **Wizard and Other Setup Options**

**View As filter**. If Salesforce is set up to use the Sales Cloud Collaborative Forecasts feature, the filter shows forecast user names. If your org doesn't use Collaborative Forecasts, filter shows role developer names. In either case, pipe rolls up to the selected user. If your org doesn't use Salesforce role hierarchy, this filter does not appear.

# **Datasets Used**

Activities.

#### **KPI Calculations**

#### Top Section (2)

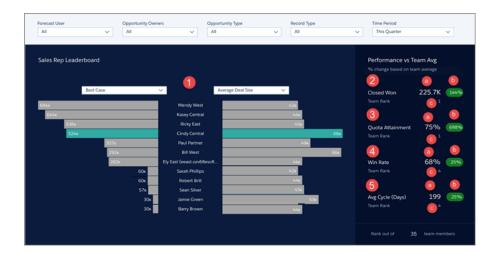
- Total Activities. Total number of activities with due date in the selected period.
- Total Activities comparison. (Total activities for selected user Total activities) / Total activities.
- Completed Activities. Total number of activities marked as complete based on due date in the selected period. Events are marked as complete if the event date is in the past.
- Completed Activities comparison. Completed activities for the selected user Completed activities total / Completed activities total.
- Overdue Activities. Total count of any activity which is overdue. Includes tasks not marked as complete with due dates are in the past.

#### Middle and Lower Sections (3)

- Calls. Number of tasks of type call with due date in selected period.
- Calls by Week. Number of calls per week with due date in selected period.
- Calls vs. Team Avg. Number of calls for selected user compared with average number for team. Team is made up of activity owners who roll up to user selected in **View As** filter or user selected in **Activity Owner** filter.
- Inbound Calls. Number of inbound calls based on Call Type field in the standard Tasks object
- Outbound Calls. Number of outbound calls based on Call Type field in the standard Tasks object.
- Emails. Number of tasks of type email with due date in selected period.
- Emails by Week. Number of emails per week with due date in selected period.
- Emails vs. Team Avg. Number of emails for selected user compared with average number for team. Team is made up of activity owners who roll up to user selected in **View As** filter or user selected in **Activity Owner** filter.
- High Priority emails. Number of high-priority emails based on standard Tasks object Priority field.
- Normal Priority emails. Number of normal emails based on standard Tasks object Priority field.
- Events. Number of events with due date in selected period.
- Events by Week. Number of events per week with due date in selected period.
- Events vs Team Avg. Number of events for selected user compared with average number for team. Team is made up of activity owners who roll up to user selected in **View As** filter or user selected in **Activity Owner** filter.
- Complete events. Number of events marked closed.
- Open events. Number of future events within the selected period.
- Tasks. Number of open tasks due in the selected period, including overdue tasks.
- Tasks by Week. Number of tasks per week with due date in selected period.
- Tasks vs. Team Avg. Number of tasks for selected user compared with average number for team. Team is made up of activity owners who roll up to user selected in **View As** filter or user selected in **Activity Owner** filter.
- Complete tasks. Number of tasks marked closed.
- Open tasks. Number of future events in the selected period.

# Sales Analytics Team Benchmark Dashboard

Shows a ranking of sales rep results across your team's KPIs, such as closed won deals, best case, and average deal size. Also shows each rep's performance against team average.



# **USER PERMISSIONS**

To use Analytics apps:

 Use Analytics Templated Apps

To use Sales Analytics:

 Access Sales Cloud Analytics Templates and Apps

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

# **Default Behavior and Recommended Options**

Select two KPIs in the main (bar) chart (1) to compare one measure of performance against another. Both selectors contain the same KPIs so you can compare whatever is on the left with whatever is on the right. The rank order of your team sorts according to the measure selected on the left.

Select a specific rep to view their scorecards in the right column, which also shows the rep's team rank. Team is defined by all the reps that show up in the bar chart, depending on what you select in the Forecast User/Manager Role filter (**Forecast User** in image).

#### **Wizard and Other Setup Options**

**Forecast User/Manager Role filter (***Forecast User* in image). If Salesforce is set up to use the Sales Cloud Collaborative Forecasts feature, the filter shows forecast user names. If your org doesn't use Collaborative Forecasts, filter shows role developer names. In either case, pipe rolls up to the selected user. If your org doesn't use Salesforce role hierarchy, this filter does not appear.

**Opportunity Type filter**. Values shown determined by selection made in wizard page 5, question 3. By default, the filter uses the standard Opportunity Type field.



**Time Period filter**. All time periods based on Salesforce fiscal year setting.

Supports Opportunity Splits if the feature is enabled in your org. See Opportunity Splits.

#### **Datasets Used**

Opportunities (or Opportunity Splits)

- User Manager
- User Allocation
- Activities

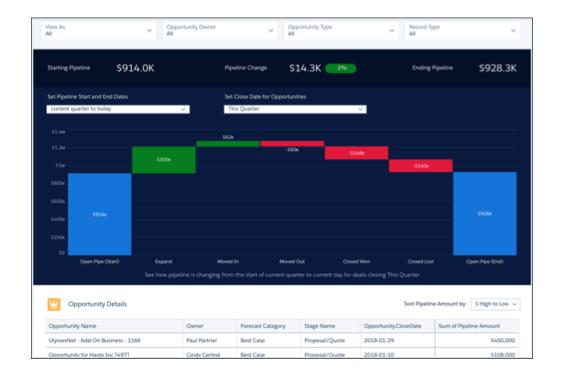
#### **KPI Calculations**

All KPIs appear in the right-hand column.

- Closed Won (2a). Total amount closed won based on selected time period, which may include future opportunities.
- Closed Won Comparison (2b). (Total amount closed won for selected time period to date [for owner selected in main chart (1)] Average total amount closed won for team during same period) / Average total amount closed won for all team members during the same period. Comparative value appears only if you select a sales rep in main chart (1), otherwise you see 0.
- Closed Won Team Rank (2c). Rank of rep selected in the main chart (1) based on closed won business in the selected time period.
   Rank based on opportunity owners who roll up to the manager selected in Forecast User filter as well as the owners selected in Opportunity Owner filter. Rank appears only if you select a sales rep in main chart (1), otherwise you see a 1.
- Quota Attainment (3a). Closed Won / Quota Amount based on selected time period, which may include future opportunities.
- Quota Attainment Comparison (3b). (Quota attainment for rep selected in main chart (1) Quota attainment for team) / Quota attainment for team. Comparative value appears only if you select a sales rep in main chart (1), otherwise you see 0.
- Quota Attainment Team Rank (3c). Rank of rep selected in main chart (1) based on quota attainment in the selected time period. Rank based on opportunity owners who roll up to manager selected in **Forecast User** filter as well as the owners selected in **Opportunity Owner** filter. Rank appears only if you select a sales rep in main chart (1), otherwise you see a 1.
- Win Rate (4a). Total amount won / Total amount closed (Won or Lost) based on selected time period, which may include future opportunities.
- Win Rate Comparison (4b). (Win rate for the owner selected in main chart (1) Win rate for team) / Win rate for team. Comparative value appears only if you select a sales rep in main chart (1), otherwise you see 0.
- Win Rate Team Rank (4c). Rank of rep selected in main chart (1) based on their win rate in the selected time period. Rank based on opportunity owners who roll up to the manager selected in **Forecast User** filter as well as the owners selected in **Opportunity Owner** filter. Rank appears only if you select a sales rep in main chart (1), otherwise you see a 1.
- Avg Sales Cycle (5a). Number of days from CreatedDate in the selected time period, which may include future opportunities.
- Avg Sales Cycle Comparison (5b). (Sales cycle for rep selected in main chart (1) Average sales cycle for team) / Average sales cycle for team. Comparative value appears only if you select a sales rep in main chart (1), otherwise you see 0.
- Avg Sales Cycle Team Rank (5c). Rank of rep selected in main chart (1) based on sales cycle in the selected time period. Rep with shortest sales cycle receives top ranking. Rank appears only if you select a sales rep in main chart (1), otherwise you see a 1.

#### Sales Analytics Trending Dashboards

View company, team, and pipeline changes for a given period, including beginning and end values of the pipe as well as what's moved in and out.





**Note**: The following pertains to Team Trending (shown), Company Trending, and Trending (individual) dashboards, except as noted.

# **Default Behavior and Recommended Options**

Dashboards show the pipeline for all opportunity owners rolling up to the manager using the app. Depending on which dashboard you view, choose another user to change opportunity owners reflected in the chart.

- Team Trending (shown): Change opportunity owner using the **Forecast User/Manager Role/Opportunity Owner** filter (*Forecast User* in image). Filter name changes depending on how your org is set up. See Wizard and Other Setup Options.
- Company Trending: Change opportunity owner using the View As filter.
- Trending (individual): Change opportunity owner using the Opportunity Owner filter.

The dashboard supports only fields within the opportunity history table. Even if you select a custom amount field in the wizard, the dashboard contains only the standard opportunity amount field. Filters at the top use only current opportunity values; they don't reflect historical values. For example, if the owner of the opportunity has changed, historical data does not reflect the change.

The dashboard does not support opportunity splits.

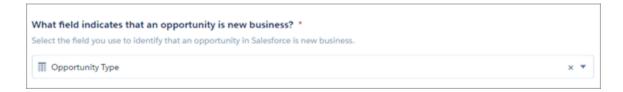
#### **Wizard and Other Setup Options**

**View As filter**. Contents of this filter depend on your org:

- If your org uses the Sales Cloud Collaborative Forecasts feature, the filter lists forecasting managers as defined by the forecast hierarchy.
- If your org defines a role structure/hierarchy but doesn't use Collaborative Forecasts, the filter lists manager roles as defined by the hierarchy.
- If your org does not define role hierarchy, the filter lists opportunity owners.

Note: Pertains only to Team Trending dashboard.

**Opportunity Type filter**. Values shown determined by selection made in wizard page 5, question 3. By default, the filter uses the standard Opportunity Type field.



#### **Datasets Used**

Pipeline Trending, including data from Opportunity History.

#### **KPI Calculations**

#### Time period filters

Time periods based on Salesforce fiscal year setting.

- Set Pipeline Start and End Dates. Select the start and end dates for when you'd like to view the pipeline. Click Year, Quarter, Month, Weeks, or Days to indicate unit of time. Then either click edit icon and type in a number or drag slider handles to set the start and end for the period you'd like to view. For example, click Quarters, then drag left handle to -3 and drag right handle to +1 to view pipeline starting three quarters ago until one quarter from now.
- Set Close Date for Opportunities. Select the close date for the opportunities you'd like to include in your view of the pipeline.

#### Main (Waterfall) Chart

- Values along top
  - Starting Pipeline. Total amount open during the selected starting period.
  - Pipeline Change. (Total amount open during selected starting period total amount open during selected end period/ Total
    amount open during selected starting period). Does not include future closed opportunities.
  - Ending Pipeline. Total pipeline at the end of the period.
- Values in vertical bars
  - Open Pipe (Start). Total pipeline at the start of the time period.
  - New. Opportunities created after the start period.
  - Expand. Existing opportunities in which total amount was increased since start of the period.
  - Moved In. Opportunities with close dates moved into the selected time period. (Where close date was changed after start of the period.)
  - Moved Out. Opportunities with a close date that no longer falls within the selected time period. (Where close date was changed after start of the period.)
  - Reduce. Opportunities in which total amount is less than at the beginning of the period.
  - Closed Won. Opportunities closed won after the beginning of the period.
  - Closed Lost. Opportunities lost after the beginning of the period.
  - Open Pipe (Today). Total pipeline at the end of the period.

Sales Analytics Team Whitespace Dashboard

Use this dashboard to uncover resell and upsell opportunities by viewing whitespace. Whitespace means accounts that you can revisit to create new business.

# USER PERMISSIONS

To use Analytics apps:

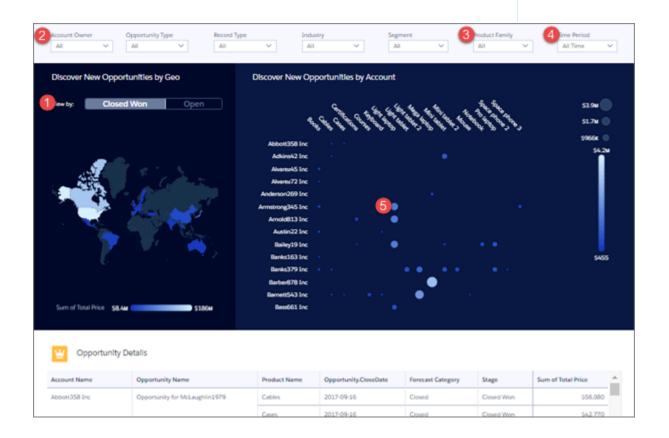
 Use Analytics Templated Apps

To use Sales Analytics:

 Access Sales Cloud Analytics Templates and Apps

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- Edit Analytics Dataflows



Note: The following pertains to Team Whitespace (shown) and Whitespace (individual) dashboards, except as noted.

# **Default Behavior and Recommended Options**

Start by viewing products your team or individual reps have sold by account and what's in the pipeline. You can also see accounts not associated with products and products that have not been sold to any account. Use filters to group similar accounts to spot product whitespace.

Team version shows accounts where you and subordinate members of your team are named owners or other accounts that you can see based on security settings in your org.

Opens to all closed won and open deals for a given time period for the entire team or an individual rep. Click **Closed Won** (shown in image) or **Open** in the **View by** toggle (1) to see just those deals. Select a sales rep's name from the **Account Owner** filter (2) to view deals for that rep. Change the **Product Family** (3) or **Time Period** (4) filters to narrow time period and specific products.

Position cursor over a bubble (5) to see the size of a deal and which products are involved. Bubble sizes increase according to the amount of the deal. Click the bubble to open the details, then take action from the opportunity to recommend steps to pursue a new opportunity.

#### **Wizard and Other Setup Options**

Sales Analytics includes this dashboard only if you select Products on the wizard page that lets you add objects to your app.



Wizard selections made when you create the app determine the labels and values in the filters numbered in the image. Select basic create or accept default values in custom create to use labels and values from standard Salesforce fields. Select other fields from the following wizard questions to customize filters:

- 1. Opportunity Type in image. Wizard page 5, question 3. Product Family in image. Wizard page 6, question 2.
- **2. Industry** in image. Wizard page 4, question 2.
- **3. Segment** in image. Wizard page 4, question 1.
- **4. Product Family** in image. Wizard page 6, question 2. Only available if you add products to the app on the wizard page that lets you add objects.

**Record Type filter (5)**. Only appears if your org uses record types.

Time Period filter (6). All time periods based on Salesforce fiscal year setting.

**Opportunity Details chart**. Amount column changes to Schedule Amount, Close Date column changes to Schedule Date if you select Product Schedules on page that lets you add data to the app.

# **Datasets Used**

- Accounts
- Products
- Oppty Products

Combination of these three datasets lets you view accounts with or without products and products with or without opportunities with accounts.

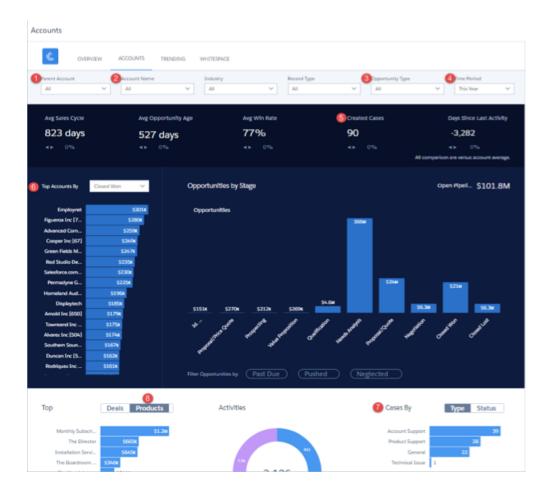
#### **KPI Calculations**

#### **Main Chart**

Shows product total price by account for the selected period for either closed won, open, or both depending on selected filters. Row visibility settings from Opportunities dataset determine which accounts appear in the chart.

# Sales Analytics Sales Rep Accounts Dashboard

A snapshot of opportunity, case, and activity trends to help sales reps stay on top of all their accounts.



#### **Default Behavior and Recommended Options**

View data for a specific account by selecting from the **Parent Account** (1) or **Account Name** (2) filters along the top or the **Top Account** widget (6) on the left. The dashboard shows all accounts and related opportunities visible to the person running the app. Percentages at top of main chart compare the selected account with all other accounts based on other filter selections. Filter selections can be **Record Type**, **Industry Type**, and so on. Selected account can come from either **Parent Account** (1) or **Account Name** (2) filters at top or **Top Accounts** (6) at left.

# **Wizard and Other Setup Options**

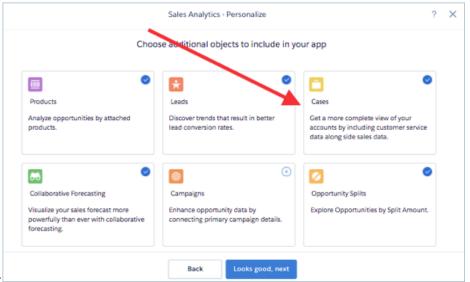
**Parent Account filter**. If you use the standard Parent Account field on the Accounts object, Sales Analytics includes this filter. It's populated with the account at the top of the hierarchy.

**Opportunity Type filter**. Values shown determined by selection made in wizard page 5, question 3. By default, the filter uses the standard Opportunity Type field.



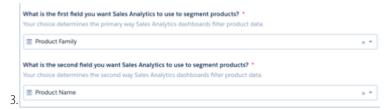
**Time Period filter**. All time periods based on Salesforce fiscal year setting.

Cases widgets. Only included if you use the Cases object in Salesforce and you select Cases on the wizard page that lets you add objects



to your app.

Top Products chart. Uses values from fields selected in wizard page 6, questions 2 and



**Opportunity Details chart**. Amount column changes to Schedule Amount, Close Date column changes to Schedule Date if you select Product Schedules on page that lets you add data to the app.

#### **Datasets Used**

- Accounts
- Opportunities
- Oppty Products (if you select Products on the wizard page that lets you choose to add objects)
- Cases (if you select Cases on the wizard page that lets you choose to add objects)
- Activities
- Quota

#### **KPI Calculations**



# **Top of Main Chart**

- Avg Sales Cycle (1). Average of (opportunity close date created date) for won opportunities.
- Avg Sales Cycle comparison (2). (Average cycle for account selected Average cycle for all accounts depending on filter selections) / Average cycle for all accounts depending on filter selections for closed won opportunities.
- Avg Opportunity Age (3). Average of current date- created date for open opportunities.
- Avg days in sales cycle comparison (4). (Average cycle for selected account Average cycle for all accounts depending on filter selections) / Average cycle for all accounts depending on filter selections for open opportunities.
- Avg Win Rate (5). Total won/ (Total won + Total lost).
- Avg Win Rate comparison (6). (Win rate for selected account Win rate for all accounts depending on filter selections) / Win rate for all accounts depending on filter selections.
- Created Cases (7). Total count of created cases in selected period.
- Created Cases comparison (8). (Created cases for selected account created cases for all accounts depending on filter selections) / Created cases for all accounts depending on filter selections.
- Days Since Last Activity (9). Today Last update date or Last activity date.
- Days Since Last Activity comparison (10). (Days since last activity for selected account Days since last activity for any account depending on filter selections) / Days since last activity for any account depending on filter selections.



# **Main Chart Area**

- Top Accounts By...(1). Shows top accounts for selected period. Can filter by Closed Won Amount, Avg Sales Cycle, #Activities Completed, or Open Pipeline.
- Opportunities by Stage (2). Shows amounts for selected period. Further filter by:
  - Past Due (3). Opportunities with close date in the past.
  - Pushed (4). Opportunities with close date pushed to future at least once.
  - Neglected (5). Opportunities with no activity in at least 60 days.
- Top deals or products (6). Products toggle included if you select Products on the wizard page that lets you add objects to your app. Amounts based on selections from top charts.
- Activities (7). Total number of activities by type.

• Cases By (8). Only included if you use the Cases object in Salesforce and you select Cases on the wizard page that lets you add objects to your app. Select either Type or Status.

Sales Analytics Sales Rep Overview Dashboard

Sales reps: start here to see the status of opportunities you own and get ideas for the quickest ways to make quota. Review quota attainment, bookings, and pipeline for a given time period. Also uncover key opportunities for accelerating deal closing and review the number of activities you've completed in the selected period.

## **Default Behavior and Recommended Options**

The top chart (1) shows deal closings over time by all forecast categories. Change the Forecast Category filter (2) to Best Case, Commit, or another category to get ideas for the quickest path to making your quota.

The Areas to Focus on to Close More Deals chart (3) opens to all sales stages. Select one or more sales stages from the filter (4) to view top open deals and neglected opportunities that can help you hit quota.

The dashboard shows accounts where you're the named owner.

# **Wizard and Other Setup Options**

Quotas. Dashboard automatically includes quota information from Sales Cloud Collaborative Forecasts Quotas if your org uses this feature. If it does not, you can manually upload quotas data into the app from an external tool as a CSV file. See Collaborative Forecasting and Quotas Data in Sales Analytics on page 712.

Opportunity amounts. In wizard page 6, question 1: If you select a custom field that's tracked historically, the dashboard shows



**Neglected opportunities (5).** Determined by a flag with the threshold of 60 days in the Sales Analytics dataflow. Choose your own threshold by using the Dataflow Editor on page 105 to change the value.

Account bar chart (6). To see amounts, your org needs to use the standard Accounts object Annual Revenue field.

#### **Datasets Used**

- Opportunities
- Opportunity Splits (if you add Opportunity Splits to the app on the wizard page that lets you add objects)
- Quota

#### **KPI Calculations**

#### **Main Chart**

- Closed Won. Total amount closed won for selected period. May include future closed opportunities.
- Open Pipe. Total open pipeline amount for selected period.
- Activities Completed. Number of activities completed in selected period.

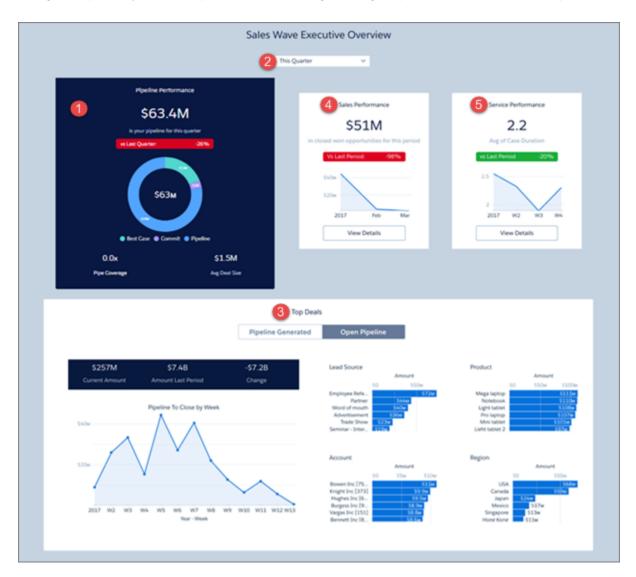
# **Widgets at Bottom**

- Top Open Deals. Open opportunities set to close in the selected period ordered by amount.
- Neglected Opportunities. Open opportunities set to close in selected period with no activities (tasks/events) or record updates in the past 60 days. Can change number of days by editing the Sales Analytics dataflow.

• Accounts with no opportunities. Accounts ordered by annual revenue that have zero opportunities.

# Sales Analytics Executive Overview – Pipeline Performance Dashboard

Sales executives get instant pipeline status. You can view the current amount in the pipe, comparison to the previous period, projected closing, and top deals by lead source, product, account, and region. Also get top-level views of sales and service performance.



# **Default Behavior and Recommended Options**

Pipeline Performance chart (1) shows results for the current quarter. View results from a different period by changing the selection in the filter at top (2). Also shows pipeline coverage for the period, assuming you track quotas for your team. And shows average deal size for open opportunities set to close that period.

Top deals widget (3) defaults to deals set to close during selected period (**Open Pipeline**). Switch toggle to **Pipeline Generated** to see deals generated during the period.

To view sales and service performance overviews, click **View Details** buttons in Sales Performance (4) and Service Performance (5) charts.

# **Wizard and Other Setup Options**

- Products. Only included if you add Products to your app on the wizard page that lets you add objects.
- Services data. Only included if you add Cases to your app on the wizard page that lets you add objects.

#### **Datasets Used**

- Opportunities
- Opportunity Products (if you add Products to the app)
- User Allocation
- Pipeline Trending
- Cases (if you add Cases to the app)

#### **KPI Calculations**

# **Pipeline Performance**



- 1. Pipeline Performance. Total amount open opportunities for selected period.
- 2. Comparison to prior period (quarter, year, month, etc. depending on selected period). (Total amount open opportunities to date in selected period Total amount open opportunities in prior period) / Total amount open opportunities in prior period uses historical open pipeline amount.
- **3.** Pipe coverage. Total open quota / Remaining quota for selected period. Remaining quota equals Sum of total sales rep quota Closed won.
- **4.** Avg Deal Size. Average Amount for open opportunities in selected period.

# **Top Deals**



- 1. This period (quarter, year, month, etc., depending on selected period). Either total open set to close this quarter or total created this quarter (open or closed) depending on whether you select Open Pipe or Pipe Generated (a).
- 2. Last period (quarter, year, month, etc., depending on selected period). Either historical amount open at the same time last period or total pipeline generated last period.
- 3. Change. This Period Last Period.

Product Name widget appears only if you add Products to your app.

#### **Sales Performance**



- 1. Sales performance. Total closed won in selected period.
- 2. Comparison to prior period (quarter, year, month, etc. depending on selected period). (Total closed won in current period total closed won prior period) / Total closed won prior period.
- **3.** Total closed over time. Total closed won by week.

# **Service Performance**

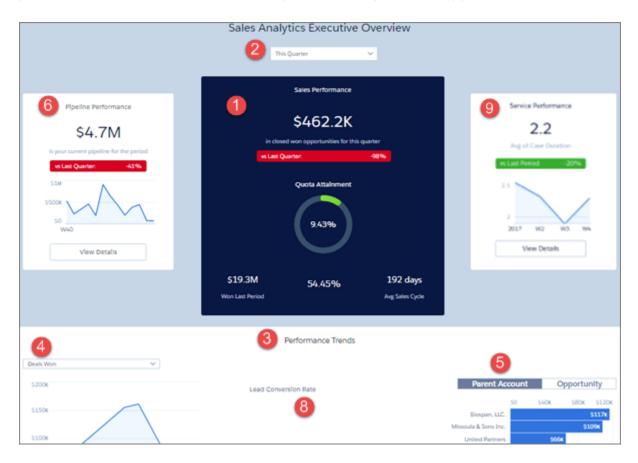


1. Service performance. Average days to close cases during selected period.

- 2. Comparison to prior period (quarter, year, month, etc. depending on selected period). (Average time to close in selected period Average time to close in prior time period) / Average time to close in prior time period.
- **3.** Timeline. Average time to close cases by week.

Sales Analytics Executive Overview – Sales Performance Dashboard

Sales executives get instant insight into closed business and quickly recognize trends. See bookings for the period, changes from previous period, as well as win rate, lead conversion rate, and top deals. Also see top-level views of pipeline and service business.



# **Default Behavior and Recommended Options**

Sales Performance chart (1) shows results for the current quarter. View results from a different period by changing the selection in the filter at top (2)

Performance Trends chart (3) defaults to closed won opportunities. View other closed opportunities (such as lost) by changing the filter (4) selection.

Top deals widget (5) defaults to accounts. Toggle between **Parent Account** and **Opportunity**.

To view pipeline and service performance overviews, click **View Details** buttons in Pipeline Performance (6) and Service Performance (7) charts.

# **Wizard and Other Setup Options**

• Lead Conversion Rate (8). Only included if you add Leads to the app with the wizard page that lets you add objects.

• Service Performance (7). Only included if you add Cases to your app on the wizard page that lets you add objects.

### **Datasets Used**

- Opportunities
- User Allocation
- Leads (if you add Leads to the app)
- Cases (if you add Cases to the app)

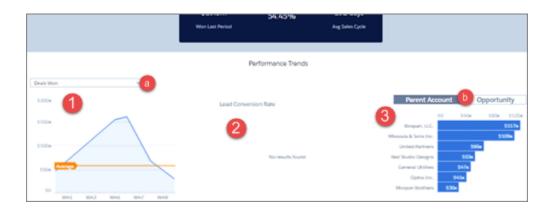
### **KPI Calculations**

## **Pipeline Performance**



- 1. Sales Performance. Total closed won in selected period.
- 2. Comparison to prior period (quarter, year, month, etc., depending on selected period) (Total closed won to date in current period Total closed won prior period) / Total closed won prior period.
- **3.** Quota Attainment. Total quota / Total closed. Based on sum of all sales rep quotas.
- 4. Won Last Period. Total won in prior selected period (quarter, year, month, etc., depending on selected period).
- 5. Win rate. Total closed won amount / Total closed amount win rate. Total closed won amount / Total closed amount.
- **6.** Avg Sales Cycle. Average time to close for all closed won opportunities.

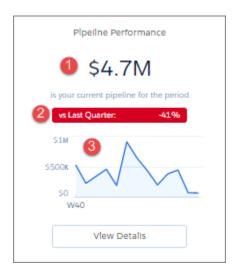
### **Performance Trends**



- 1. Deals over time. Either closed won or closed lost depending on filter (a) selection, week by week for selected period. Average line shows average closed won or lost.
- **2.** Lead Conversion Rate. Leads converted to closed won opportunities / Total leads created in selected period, by week. Only shows if customer adds leads when creating app with wizard. (Not shown in images.)
- **3.** Top accounts or opportunities. Depending on toggle (b) selection, shows top deals according to opportunity name or account name (or parent account name if your org uses account hierarchy, as shown in image). Shows either top closed won or closed lost depending on filter (a) selection.

Product Name widget appears only if you add Products to your app.

### **Pipeline Performance**



- 1. Pipeline Performance. Total open opportunity amount for selected period.
- 2. Comparison to prior period (quarter, year, month, etc., depending on selected period). (Total open opportunity amount to date this period Total open opportunity amount in prior period) / Total open opportunity amount in prior period. Prior period uses historical open pipeline amount.
- **3.** Open deals over time. Open deals by week of close date.

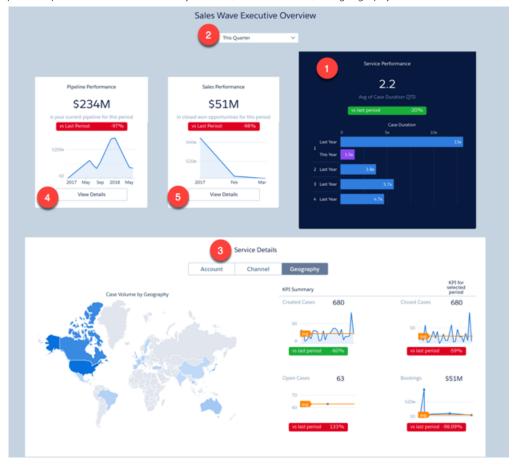
## **Service Performance**



- 1. Service performance. Average days to close cases during selected period.
- **2.** Comparison to prior period (quarter, year, month, etc. depending on selected period). (Average time to close in selected period Average time to close in prior time period) / Average time to close in prior time period.
- **3.** Timeline. Average time to close cases by week.

## Sales Analytics Executive Service Performance

Sales executives get instant insight into customer service performance. See average case duration for a selected period compared with previous periods and case duration by account, service channel, and geography.



## **Default Behavior and Recommended Options**



Note: This dashboard is only included if Sales Wave is set up to include cases. See Wizard and Other Setup Options.

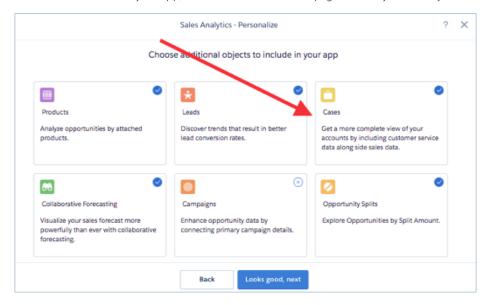
Service Performance chart (1) shows results for the current quarter. View results from a different period by changing the selection in the filter at top (2).

Service Details chart (3) defaults to showing cases by Parent Account. Select Channel from toggle at top to view cases according to the channels where they came from (for example, email, chat, and phone). Select Geography to view cases by locale.

To view pipeline and sales performance overviews, click Details buttons in Pipeline Performance (4) and Sales Performance (5) charts.

## **Wizard and Other Setup Options**

To add this dashboard to your app, select Cases on the wizard page that lets you add objects to the app.



## **Datasets Used**

- Cases
- Accounts

### **KPI Calculations**

Service Performance



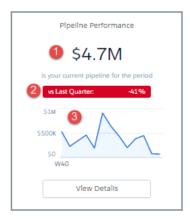
• Service performance (1). Average days to close cases during selected period.

- Comparison to prior period (2). (Average time to close to date in selected period Average time to close in prior period) / Average time to close in prior period.
- Average case duration by quarter (3). Average time to close for cases per quarter, this year and last year.

#### Service Details (at bottom)

- Account. Average case duration by total amount closed won by account.
- Channel. Average duration and number of closed cases by channel
- Geography. Number of cases created by region. *Region* uses the answer for the primary field from the Accounts object selected in wizard.
- Created Cases. Total number of cases created in selected period.
- Created Cases vs last period. (Number of cases created in current period Number of cases created in previous period) / Number of cases created in previous period.
- Closed Cases. Total number of cases closed within selected period.
- Cases Closed vs last period. (Number of cases closed in current period Number of cases closed in previous period) / Number of cases closed in previous period.
- Open cases. Total number of cases currently open. (Not impacted by selected period.)
- Open Cases vs last period. (Number of open cases today Number of open cases at the start of the previous period) / Number of open cases at the start of the previous period. (Number of open cases at the start of previous period is estimated based on number of cases created and closed since the beginning of the previous period.)
- Bookings. Total amount closed won in selected period.
- Bookings vs last period. (Total amount closed won in current period Total amount closed won in previous period) / Total amount closed won in previous period).

### Pipeline Performance



- 1. Pipeline Performance. Total open opportunity amount for selected period.
- 2. Comparison to prior period (quarter, year, month, depending on selected period). (Total open opportunity amount to date this period Total open opportunity amount in prior period) / Total open opportunity amount in prior period uses historical open pipeline amount.
- **3.** Open deals over time. Open deals by week of close date.

#### Sales Performance



- 1. Sales performance. Total closed won in selected period.
- 2. Comparison to prior period (quarter, year, month, depending on selected period). (Total closed won in current period total closed won prior period) / Total closed won prior period.
- **3.** Total closed over time. Total closed won by week.

## Sales Analytics Company Overview Dashboard

Intended to give sales leaders and operations staff high in the corporate hierarchy an overview of the sales business and operations.

# **USER PERMISSIONS**

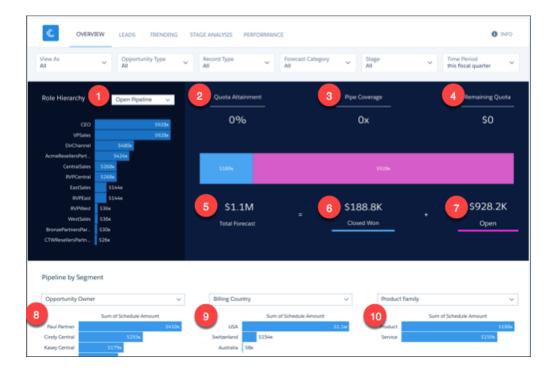
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- Edit Analytics Dataflows



### **Default Behavior and Recommended Options**

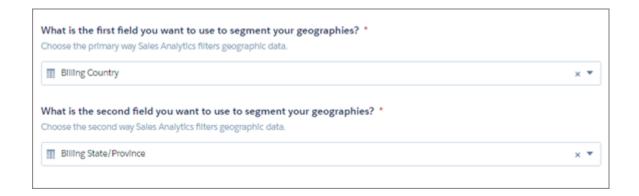
Shows quota progress and pipeline rolled up to the role one level below the manager selected in the **View As** filter. Defaults to showing results for the manager currently running the app. Select a different manager from the **View As** filter to view rollup of pipeline and quota for all team members subsidiary to that manager in the role hierarchy. You can remove any KPIs your organization doesn't care about by removing them from the dashboard layout. To learn how to build and edit Analytics dashboards, see Build Analytics Dashboards.

### **Wizard and Other Setup Options**

- **View As filter.** If Salesforce is set up to use the Sales Cloud Collaborative Forecasts feature, the filter shows forecast user names. If your org doesn't use Collaborative Forecasts, filter shows role developer names. In either case, quota and pipe roll up to the selected user. If your org doesn't use Salesforce role hierarchy, this filter does not appear.
- **Opportunity Type filter**. Values shown determined by selection made in wizard page 5, question 3. By default, the filter uses the standard Opportunity Type field.



- Time Period filter. All time periods based on Salesforce fiscal year setting.
- Geography chart at bottom of dashboard uses values from fields selected in wizard page 4, questions 4 and 5.



- Product chart at bottom of dashboard uses values from fields selected in wizard page 6, questions 2 and 3, if you added Products object to your app. If you set up app without Products, the chart shows fields selected from wizard page 4, questions 1 and 2 about how you segment customers.
- **Top Deals details chart**. Amount column changes to Schedule Amount, Close Date column changes to Schedule Date if you select Product Schedules on page that lets you add data to the app.

Supports Opportunity Splits if the feature is enabled in your org. See Opportunity Splits.

#### **Datasets Used**

- Opportunity
- Oppty Products (optional)
- User Manager
- Roles (optional)
- User Allocations
- ForecastingItems (optional)

### **KPI Calculations**

### Role Hierarchy Filter Options (1)

- Open Pipeline. For selected role, total roll-up opportunity amount for any open opportunity with a close date in selected time period.
- Closed Won. For selected role, total roll-up opportunity amount for any closed won opportunity with a close date in selected time period.
- Avg Deal Size (Closed Won). For selected role, total roll-up average opportunity amount for all closed won opportunities with close dates in selected time period.
- Avg Deal Size (Open). For selected role, total roll-up average opportunity amount for all open opportunities with close dates in selected time period.
- Opportunity Count (Closed Won). For selected role, total roll-up opportunity count for all closed won opportunities with close dates in selected time period.
- Opportunity Count (Open). For selected role, total roll-up opportunity count for all open opportunities with close dates in selected time period.

### **Top of Main Chart**

• Quota Attainment (2). Closed won/quota. Quota is the sum of the sales reps quotas that roll up to the role or user selected in the View As filter

- Pipe Coverage (3). Open pipe/remaining quota. Open Pipe amount based on value selected in Stage and Forecast filters.
- Remaining Quota (4). Quota closed won

### **Bottom of Main Chart**

- Total Forecast (5). Closed won + opportunity amount for categories selected in View As and Opportunity Type filters
- Closed Won (6). Total amount of opportunities won in the selected time period.
- Open (7). Based on Forecast Category. Open pipeline based on close date from the period selected in the **Time Period** filter and categories selected in the **Forecast Hierarchy** filter.

Last two amounts shown in horizontal bar in middle of main chart.

## **Pipeline by Segment Charts**

- Owners (8). Total opportunity amount grouped by opportunity or account owner. Based on values selected in filters at top of the dashboard.
- Geographies (9). Total opportunity amount grouped by geography based on close date from the selected time period.
- Products (10). Product total price grouped by product family or product name, depending on how you answered wizard page 6, questions 2 and 3 about products.

### Sales Analytics Lead Analysis Dashboard

Boost operational efficiency by taking a close look at your team's lead conversions. Quickly identify leads that convert the most quickly and visualize the team's conversion rate. And get a view into top leads by source and region.

# **USER PERMISSIONS**

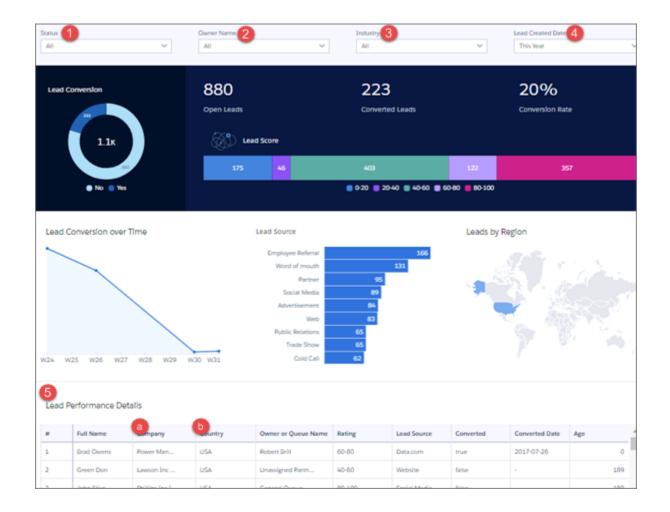
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- Manage Analytics Templated Apps
- Edit Analytics Dataflows



## **Default Behavior and Recommended Options**

Default view shows leads for the entire team. To see leads according to each team member, select a member's name from the **Owner Name** filter (2).

In the Lead Performance Details chart (5), open the action menus from Full Name (a) or Company (b) fields and post to Chatter, create a task or event, or perform another action. Converted leads in Salesforce can't be edited, so you can't perform actions from a converted lead.

### **Wizard and Other Setup Options**



Wizard selections made when you create the app determine the labels and values in the KPIs numbered in the image just above. Select basic create or accept default values in custom create to use labels and values from standard Salesforce fields. To customize KPIs, select other fields from the wizard.

- 1. Lead Score in image, defaults to showing count of leads grouped by their rating. Customize with wizard page 8, question 1.
- 2. Lead Source in image. Defaults to showing count of leads grouped by their source. Customize with wizard page 8, question 2.
- 3. Leads by Region in image. Defaults to showing count of leads grouped by region. Customize with wizard page 8, question 3.

Industry filter (3 in main image at top). Change filter by choosing a field other than Industry in wizard page 8, question 4.

**Lead Performance Details chart.** Amount column changes to Schedule Amount, Close Date column changes to Schedule Date if you select Product Schedules on page that lets you add data to the app.

#### **Datasets Used**

- Leads
- Users

#### **KPI Calculations**

### **Filters Across Top**

- 1. Status. Values from your org's standard Lead Status field.
- 2. Owner Name. Owner or gueue name for owner of lead.
- 3. Industry. Values from your org's Industry field. Can change filter with configuration wizard. See Wizard and Other Setup Options.
- 4. Lead Created Date. Based on Salesforce fiscal year settings.

### **Top Chart**



- 1. Lead Conversion. Counts of closed and open leads. (Leads grouped by IsConverted.)
- 2. Open Leads. Total number of open leads created during period selected in Lead Created Date filter.
- **3.** Converted Leads. Number of converted leads created during period selected in Lead Created Date filter. Determined by the isConverted flag on Leads. Counts only leads converted to contacts, accounts, or opportunities.
- 4. Conversion Rate. Leads converted / Leads created during period selected in Lead Created Date filter.
- 5. Lead Score. Counts of leads grouped by Rating. Can change grouping with configuration wizard. See Wizard and Other Setup Options.

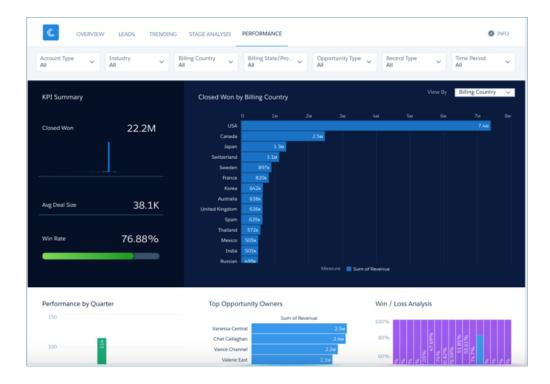
## Middle Chart



- 1. Lead Conversion over Time. Weekly count of converted leads.
- **2.** Lead Source. Count of leads grouped by source. Can change grouping with configuration wizard. See Wizard and Other Setup Options.
- **3.** Leads by Region. Counts of leads grouped by region. Can change grouping with configuration wizard. See Wizard and Other Setup Options.

Sales Analytics Sales Performance Dashboard (Operations)

Sales leaders: Drill into your closed business by geography, account, product, source, or other criteria to get a 360-degree view of the team's operational efficiency.



## **Default Behavior and Recommended Options**

View all performance KPIs through a single dashboard filtered by the type of data you'd like to view.

In the main chart, change the **View By** filter (top right) to group data by dimensions available in your org. The title and type of the chart change to reflect the data being shown. The image shows deals grouped by **Billing Country** in a map. Data grouped by product or

account type is displayed with the titles *Performance by Product* or *Performance by Account Type* in a bar chart. The chart also shows closed won deals by default. Select Period Over Period in the **Display** filter to get a comparative view of closings over time. The period being compared depends on the selection in the **Time Period** filter. If you select This Quarter, for example, the chart compares the time to date in this quarter with the same period in the previous quarter.

## **Wizard and Other Setup Options**

Wizard selections made when you create the app determine the labels and values in the following filters (shown at top of image). Select basic create or accept default values in custom create to use labels and values from standard Salesforce fields. Select other fields from the following wizard questions to customize filters:

- Account Type in image. Wizard page 4, question 1. Opportunity Type in image. Wizard page 5, question 3.
- **Industry** in image. Wizard page 4, question 2.
- Billing Country in image. Wizard page 4, question 4.
- **Billing State/Province** in image. Wizard page 4, question 5.
- Opportunity Type in image. Wizard page 4, question 3.

Other filters can't be customized. Selections they contain are determined by the app and/or values in your org.

**Opportunity Details chart**. Amount column changes to Schedule Amount, Close Date column changes to Schedule Date if you select Product Schedules on page that lets you add data to the app.

#### **Datasets Used**

Uses Opportunity Products if you add products to the app. Otherwise uses Opportunities.

#### **KPI Calculations**

### **Header at Top and Main Chart**

- **Closed Won** for period selected in **Time Period** filter (year, month, etc.). Closed won total based on close date within the selected period. May include future closed opportunities.
- Avg Deal Size. Average size of won opportunities based on filter selections.
- Win Rate. Total amount won / Total amount closed based on filter selections.
- Closed Won by chart at right shows closed won opportunities based on View By filter selection (Billing Country in image).

#### **Charts at Bottom**

- **Performance by Quarter**. Quarter / Same guarter previous years.
- Top Ten Opportunity Owner. Top opportunity owners by amount.
- Win / Loss Analysis. Total amount closed grouped by IsWon.

Sales Analytics Sales Stage Analysis Dashboard

Shows how deals move through stages of the sales process and if deals are moving smoothly. Also reveals bottlenecks and exposes at-risk opportunities.

### **Default Behavior and Recommended Options**

Compares how long current opportunities currently take in each stage of your process with the same data for historical deals. Click a stage in the main chart and the chart to the right shows deal movement from that stage to others. The main chart shows historic and current average number of days deals spend in that stage.

By comparing current with historical data, the dashboard determines which deals are at risk and displays them in neglected, stalled, and pushed opportunities charts at bottom of dashboard.

Data comes from the Opportunity History table, which supports only the standard amount and stage name fields.

The Stage Name filter uses stage names in the standard StageName field in the Opportunities object.

# **USER PERMISSIONS**

To use Analytics apps:

 Use Analytics Templated Apps

To use Sales Analytics:

 Access Sales Cloud Analytics Templates and Apps

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

### **Wizard and Other Setup Options**

The Sales Analytics dataflow determines neglected opportunities. Change the threshold from the default 60 days to your team's preferred length of time using the Dataflow Editor. See Configure the Dataflow with the Dataflow Editor on page 105.

#### **Datasets Used**

- Opportunities
- Pipeline Trending

#### **KPI Calculations**

#### Filters at Top

- **Account**. Account names related to opportunities in the dashboard.
- Owner Name. Names of opportunity owners. May include inactive users or users who do not own any deals in the selected period.
- **Owner Role**. Role name of opportunity owners.
- **Stage Name**. Names in the standard StageName field in the Opportunities object.
- Record Type. Opportunity record type names defined in your org.
- **Close Date**. Opportunity closed date based on Salesforce fiscal year settings.
- **Historical Time Frame**. Period used to calculate average time in stage.

### Main Chart, Top

- **Historical Average**. Number of days each opportunity stay in each stage. Average days in stage for all opportunities in the OpportunityHistory object, based on period set in **Historical Time Frame** filter.
- **Open Opportunities**. Number of days current open opportunities stay in each stage. Average days in stage to date for all open opportunities with close dates within period selected in **Close Date** filter.

**Opportunity Days in Each Stage.** Shows number of opportunities moved from stage selected in main chart to other stages based on period set in **Historical Time Frame** filter.

### Main Chart, Bottom

- Probability to close. Total closed won/Total opportunities based on the selected stage during period set in **Historical Time Frame** filter. If no stage is selected, shows win rate.
- Won Deals. Total amount won during period set in **Historical Time Frame** filter.
- Lost Deals. Total amount won during period set in Historical Time Frame filter.

### **Charts Below Main Chart**

- Neglected Opportunities. Top open opportunities by amount that have not been touched in 60 days that are set to close in the selected period.
- Stalled Opportunities. Top open opportunities by amount that have stayed in current stage at least one day longer than historical average for all opportunities. Based on close date in the selected period.
- Pushed Opportunities. Top open opportunities by push count based on close date in the selected period.

## Sales Analytics Lenses

Sales Analytics app lenses augment app dashboards with targeted visualizations of your org's sales data.



| Lens Name             | Contents   | Edit Through User Interface? |
|-----------------------|--|------------------------------|
| Explore Opportunities | Details about opportunities, starting with pushed opportunities. Narrow the time period to look at pushed opportunities for a year, quarter, month, and so on. Select a new grouping, such as by team or by opportunity owner. Filter by a different stage, status, product, or any other way you break down opportunities to get a more refined view of opportunities in your pipe. | Yes.                         |

| Lens Name                       | Contents   | Edit Through User Interface?                        |
|---------------------------------|--|---|
| Historical Pipeline By Forecast | Augments Team Trending dashboard with detail about the pipeline for the past six months broken out by forecast status.   | No. Requires SAQL editing. For advanced users only. |
| Historical Pipeline By Stage    | Augments Team Trending dashboard with detail about the pipeline for the past six months broken out by sales stage.   | No. Requires SAQL editing. For advanced users only. |
| Sales Stage Details             | Augments Sales Stage Analysis dashboard, shows where specific deals stand in the sales process. Select a bubble in the chart and click drill-down button at top right to learn specifics about a deal (for example, forecast category, stage, owner, age). | Yes.  |

# Sales Analytics Datasets

When you create the Sales Analytics app, Analytics imports your Salesforce data into app datasets based on your wizard selections. The datasets drive the app's dashboards and lenses.

| Dataset Name      | Contents  | Special Requirements   |
|-------------------|---|--|
| Accounts          | Data about accounts. Includes accounts without opportunities.   | None.  |
| Opportunities     | Data about accounts, opportunities, and users.  | None.  |
| Oppty Products    | Data about products with opportunities and accounts.  | None.  |
| Pipeline Trending | Opportunity historical Data.<br>Tracks opportunity amount,<br>close date, and stage changes<br>over the life of an opportunity. | None.  |
| Quota             | Quotas data.  | Upload a CSV file on page 712 with quotas data to update this dataset if you store quotas data externally to Salesforce and don't use the Sales Cloud Collaborative Forecasts feature. |
| User Allocation   | Applies role hierarchy information to quotas data during manager roll-up.   | None.  |
| Users             | Provides details about all users in an org.   | None.  |
| Roles             | Basic data about user roles.  | None.  |

| Dataset Name       | Contents  | Special Requirements  |
|--------------------|---|---|
| Cases              | Data about cases related to accounts.   | Only included if you choose to import cases data to Sales Analytics through the configuration wizard.         |
| Activities         | Data about events and tasks.  | None.   |
| ForecastingItem    | Data about forecasts and forecast adjustments.  | Only included if you use the Sales Cloud Collaborative Forecasts feature.                                     |
| Leads              | Salesforce leads data, including converted leads connected to accounts and opportunities. | Only included if you choose to import leads data to Sales Analytics through the configuration wizard.         |
| Campaigns          | Salesforce campaign data, including opportunities connected to campaigns.                 | Only included if you choose to import campaigns data to Sales Analytics through the configuration wizard.     |
| Campaign Members   | Data about campaign members with campaigns. See who's connected to which campaigns.       | Only included if you choose to import campaigns data to Sales Analytics through the configuration wizard.     |
| Opportunity Splits | Split opportunity data.   | Only included if you choose to import opportunity splits to Sales Analytics through the configuration wizard. |
| Product Schedules  | Data about products sold according to a scheduled payment contract.                       | Only included if you choose to import product schedules to Sales Analytics through the configuration wizard.  |

# Set Up Permissions for the Sales Analytics App

Set up your organization to use the Sales Analytics app by enabling Analytics and creating and assigning permission sets.

Each Sales Analytics App license is a single-user license that provides access to Sales Analytics. It includes a single Sales Analytics app single-user license. The table shows data storage limits for the app. If you require more data, you can purchase Analytics Cloud - Additional Data Rows, which entitles you to an additional 100 million rows.

**Table 7: Sales Analytics Data Storage Limits** 

| License              | Limit   |
|----------------------|---|
| Sales Analytics Apps | 25 million rows when used without Analytics<br>Platform license. Use of Sales Analytics app |

# **USER PERMISSIONS**

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

| License                                | Limit  |
|--|--|
|  | license does not increase data limit for platform license. |
| Analytics Cloud - Additional Data Rows | 100 million rows.  |

(1) Important: Sales Analytics App license data storage limits are contractual, not technical. Licensee agrees to strictly monitor its total number of data rows.

Your org can use the Sales Analytics app with or without the Salesforce Analytics platform.

Each Sales Analytics app user needs either a Sales Analytics Apps or Sales Cloud Einstein permission set license. The Sales Analytics Apps and Sales Cloud Einstein permission set licenses enable the following permissions.

(1) Important: The Sales Analytics Apps license does not support use of Einstein Analytics platform bulk actions or Apex steps functionality. This limitation is contractual, not technical. Licensee agrees to strictly monitor its use of Analytics platform features.

| Table 6. Sales Alialytics Oser Fermissions        |   |  |  |
|---|---|--|--|
| Permission  | Function  |  |  |
| "Access Sales Cloud Analytics Templates and Apps" | Provides specific access to the Sales Analytics App as well as the data and prebuilt dashboards included with it. |  |  |
| "Download Analytics Data"                         | Download screenshots and data in tabular format through the Analytics user interface.                             |  |  |
| "Edit Analytics Dataflows"                        | Enables admins to upload and download JSON for existing data flows.   |  |  |
| "Manage Analytics Templated Apps"                 | Gives admins the ability to create Analytics apps for users in their orgs, in this case the Sales Analytics app.  |  |  |
| "Use Analytics Templated Apps"                    | Enables access to all Analytics templated apps.   |  |  |

**Table 8: Sales Analytics User Permissions** 

You assign the Sales Analytics Apps or Sales Cloud Einstein permission set licenses when you create and assign permission sets to users in your organization.

### **Sales Analytics App Setup Process**

To set up your organization to use Sales Analytics, follow these steps:

- 1. Enable Analytics for your organization.
- 2. Define the main Sales Analytics user types in your organization.
- **3.** Create permission sets to group related user permissions according to the needs of each user type.

  When you create permission sets, you also select the Sales Analytics Apps permission set license for Sales Analytics users. Select the Sales Cloud Einstein permission set license for Sales Cloud Einstein users.
- **4.** Assign a permission set to an individual user, which also *auto-assigns* either the Sales Analytics Apps or Sales Cloud Einstein permission set license to that user.

For efficiency, you can assign a permission set to groups of users. You can assign multiple permission sets to a user.

After you've completed these steps, create and share Sales Analytics with the users in your organization. Users can only explore Sales Analytics dashboards and datasets after you've shared the app with them.



Tip:

For best results, follow the steps for setting up the Sales Analytics app in the order shown here.

#### IN THIS SECTION:

- 1. Identify Sales Analytics App User Types
  Identify Sales Analytics app user types and the tasks they perform to assure that the setup process meets your team's analytics needs.
- 2. Enable Analytics and Create Sales Analytics Permission Sets

  After Salesforce provisions you with the Sales Analytics App or Sales Cloud Einstein license, enable Analytics and create permission sets for Sales Analytics users.
- 3. Assign Sales Analytics Permission Sets to Users

  Assign permission sets to one or more Sales Analytics users—either one at a time, or in bulk—to give them access to the app.

# **Identify Sales Analytics App User Types**

Identify Sales Analytics app user types and the tasks they perform to assure that the setup process meets your team's analytics needs.

The Sales Analytics App license includes the permissions required by users in your organization to administer Sales Analytics and to import, work with, and explore data. Set up the Sales Analytics in the most useful way by thinking through the different ways people can access Sales Analytics features and categorizing users into types. Here are a few examples.

In most cases, Sales Analytics addresses the needs of two basic types of people on your team:

- Users, who view Sales Analytics dashboards and datasets.
- Administrators or managers, who access all Sales Analytics functionality to create apps, dashboards, and datasets, import data, and otherwise customize the Sales Analytics experience.

Accordingly, when you set up Sales Analytics, creating two basic permission sets probably meets the needs of most users in your organization:

- A "view" permission set that contains the permissions needed by most basic-level users when they access Sales Analytics.
- A "manage" permission set that's reserved for a select few administrators and managers and contains permissions to use all Sales Analytics features.

In the detailed Sales Analytics app setup instructions that follow, we show you how to create and assign these two permission sets.

## Enable Analytics and Create Sales Analytics Permission Sets

After Salesforce provisions you with the Sales Analytics App or Sales Cloud Einstein license, enable Analytics and create permission sets for Sales Analytics users.

### **Enable the Analytics Platform**

To use Sales Analytics, first enable Analytics for your organization.

- 1. In the Salesforce Setup menu, under administer, click **Analytics Cloud | Getting Started**
- 2. Click Enable Analytics

#### **Create Permission Sets**

The next step in the setup process is to create permission sets made up of Sales Analytics user permissions. We show you how to create two permission sets:

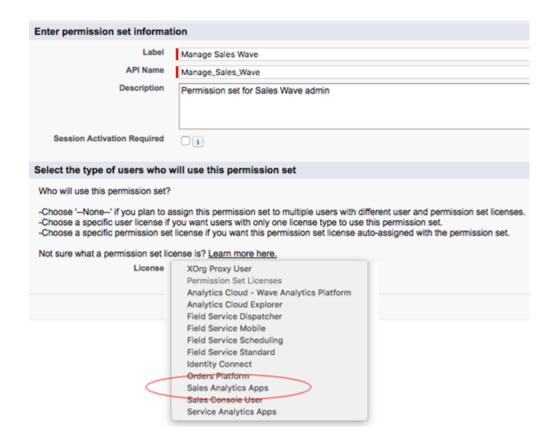
- *Manage Sales Analytics* permission set, for users who create and administer Sales Analytics.
- View Sales Analytics permission set, for users who explore app dashboards and datasets.

# **USER PERMISSIONS**

To create permission sets:

 Manage Profiles and Permission Sets

- **1.** Create a Manage Sales Analytics permission set, which gives users access to all app features.
  - a. In the Setup menu, under administer, click Manage Users | Permission Sets and then click New.
  - **b.** Enter Manage Sales Analytics in the Label field, which automatically creates the API name, as well. You can change the API name, but it can't include spaces, end with an underscore, or have two consecutive underscores. You can also enter a description, but it's optional.
  - **c.** For License, select the license to associate with this permission set. In this case, select **Sales Analytics Apps** in the Permission Set License section to set up Sales Analytics users with the app (shown in the image). Select **Sales Cloud Einstein** to set up Sales Cloud Einstein users.



When you select a specific permission set license, any user assigned to the permission set is *auto-assigned* the permission set license. If you select --None--, you must *manually* assign the permission set license to users before you can add them to the new permission set.

- d. Click Save. The Permission Set Overview page shows the new permission set. Now add user permissions to the set.
- **e.** Click **System Permissions** to open the list of user permissions enabled by the Sales Analytics and Sales Analytics and Sales Cloud Einstein licenses. Then click **Edit**.
- **f.** Select the following user permissions: "Use Analytics Templated Apps," "Access Sales Cloud Analytics Templates and Apps," "Manage Analytics Templated Apps Apps," and "Edit Analytics Dataflows." Make sure to select all four. Click **Save**. You've successfully created a permission set that enables users to create and administer Sales Analytics and access all app features. You can now assign it to users, which is covered in Assign Sales Analytics Permission Sets.
- **2.** To create a View Sales Analytics permission set, which enables users to view app dashboards and datasets, repeat the steps to create a Manage Sales Analytics permission set, with these exceptions:

- a. Name the permission set View Sales Analytics.
- b. Select only the "Use Analytics Templated Apps" and "Access Sales Cloud Analytics Templates and Apps" user permissions and click **Save**. You've successfully created a permission set that enables users to view the Sales Analytics dashboards and datasets. You can now assign it to users, which is covered in Assign Sales Analytics Permission Sets on page 701.

You can build other permission sets out of the individual permissions enabled by the Sales Analytics license, depending on the needs of users in your organization.

## Assign Sales Analytics Permission Sets to Users

Assign permission sets to one or more Sales Analytics users—either one at a time, or in bulk—to give them access to the app.

- 1. In the Setup menu, under administer, click **Manage Users | Permission Sets**.
- Warning: Assign the Manage Sales Analytics permission set sparingly because it lets users administer Sales Analytics, which lets them create, edit, and delete the app. Assign it only to users who administer or manage the app.

# **USER PERMISSIONS**

To assign a permission set to users:

**Assign Permission Sets** 

Click the permission set you want to assign to users. If you've followed the instructions in Enable Analytics and Create Sales Analytics Permission Sets on page 699, select either the Manage Sales Analytics or View Sales Analytics permission sets.

- 3. Click Manage Assignments and click Add Assignments.
- **4.** Select the users who need to manage or use Sales Analytics, and click **Done**. When you assign the permission set to users, Salesforce auto-assigns the Sales Analytics Apps permission set license to those users.

After you've completed these steps, create and share Sales Analytics with the users in your organization. Users can only explore Sales Analytics dashboards and datasets after you've shared the app with them.

# Create and Share the Sales Analytics App

Follow these steps to create Sales Analytics and start uncovering the value of your Salesforce data.

For rapid app creation, choose Basic creation, which uses default settings to create Sales Analytics. To set up Sales Analytics according to your team's specific Sales Cloud analytics requirements, choose Custom creation.

If you use the Sales Cloud Collaborative Forecasts feature to store quota data, the data is automatically available to Sales Analytics. If you track quotas outside of Salesforce, you need to upload a quotas .CSV to include quotas in Sales Analytics dashboards. See Collaborative Forecasting and Quotas Data in Sales Analytics.

# **USER PERMISSIONS**

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- **Edit Analytics Dataflows**
- 1. Log in to Salesforce and open Analytics Studio. In Salesforce Classic, select **Analytics** Studio from the Lightning Platform menu (top

right of the Salesforce window). In Lightning Experience, click the app launcher, then click the **Analytics Studio** tile.



- 2. Click Create, select App, select Sales Analytics, and then click Continue to open the configuration wizard. If you've created an app before: Choose between creating a brand new app or creating an app based on settings from a previously-created app. Click Continue. Sales Analytics runs a compatibility check against your org to be sure it includes the data to successfully create the app's datasets and dashboards. If it doesn't, follow the instructions in the error message to add the required data and start the app creation process again.
- 3. Once the org compatibility check succeeds, click **Looks good, next.**

- **4.** Choose between using preselected standard settings or custom settings to set up your app. Select **Basic** to set up your app quickly based on standard settings determined by the org compatibility check. The standard settings include collaborative forecasting if you use the Sales Cloud Collaborative Forecasts feature. Select **Custom** to open the configuration wizard, which you use to make your own, custom settings to reflect the way you and others on your team want to view data. For details about using the configuration wizard, see Customize Sales Analytics with the Configuration Wizard.
- **5.** If you choose **Basic**: You're almost done. Click **Looks good, next**, and skip to Step 9.
- **6.** If you choose **Custom**: Click **Looks good, next**. The wizard asks you to choose Salesforce objects to add to Sales Analytics. It then takes you through a set of questions about how you prefer to view data. Go to Customize Sales Analytics with the Configuration Wizard for complete instructions on how to use the wizard.
- **7.** Give your app a name that's easily recognizable to others in your company and click **Create**. That starts a dataflow that creates the app and its assets (which include a dataflow definition file, datasets, and dashboards).
- **8.** Before it creates your app, Sales Analytics checks to see that the Analytics Cloud Integration User has access to all fields in Salesforce you'd like your app to use. The check happens in the background, and if it succeeds, the app creates successfully. If it fails, you see an error that says the Integration User does not have access to specific fields. If you receive that error, here's what to do:
  - **a.** In Salesforce Setup, go to Manage Users, then Profiles.
  - **b.** Open the profile for the Analytics Cloud Integration User.
  - c. Scroll down to Field Level Security and click **View** next to the objects indicated in the error message.
  - **d.** Check **Read Access** for the fields indicated in the error message.
  - e. Refresh your browser cache, and click **Create** again.
- **9.** The app creation process can take a few minutes. You can check the status of the dataflow: Open the Analytics Home page, click the gear menu at the upper right of the page, and select Data Manager. From pulldown menu, select Dataflow View and look for your app.
- 10. Now that you've created the app, share it with users in your organization. You can only share it with users who have the Use Analytics Templated Apps and Access Sales Cloud Analytics Templates and Apps permissions enabled. (For more about Sales Analytics app permissions, see Set Up Salesforce Permissions for the Sales App). To share the app, roll your cursor over the icon for the app and click Share. Next, type in the names of team members, click Add, and click Save.
- (1) Important: When users are deactivated, they lose share and delete access to all apps they manage. To avoid "stranding" an app, be sure that manager access is assigned to at least one active user BEFORE deactivating the user who's the manager of the app.

### SEE ALSO:

Customize Sales Analytics with the Configuration Wizard Upgrade the Sales Analytics App

# Customize Sales Analytics with the Configuration Wizard

Create Sales Analytics with the configuration wizard so the app reflects how your company prefers to view Salesforce data.

When you start the app creation process, Sales Analytics opens the configuration wizard. The wizard quides you through the following steps.

1. Checks your org to be sure it meets minimum data requirements and to detect features that can be added to your app. The results let you know if you have to add data or change Salesforce settings to create the app. It also lets you know about available features.

## **USER PERMISSIONS**

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

- 2. Asks you to choose between basic and custom create options. Basic is intended for first-time app users, while custom lets experienced administrators fine-tune app setup.
- **3.** Choose the basic option, and Analytics creates the app quickly with default settings.
- **4.** Choose custom and the wizard guides you through the steps to fine-tune your app.
  - **a.** Add features to your app
  - **b.** Answer a series of questions about how you use data in your org.

The following provide details about each using each part of the wizard. Read them in the order shown to get the best results when you create Sales Analytics. Click the question mark in the top-right corner of each page of the wizard to see help for that page.

#### IN THIS SECTION:

1. Sales Analytics Wizard Data and Feature Check

At the start of app creation, Sales Analytics scans your org. It checks to make sure you can create the app and looks for features and data to add to your app.

2. Choose Sales Analytics Wizard App Creation Options

After Sales Analytics checks your org's data and features, choose between basics and custom app creation options.

- 3. Use the Sales Analytics Wizard Basic Create Option
  - Select the basic app creation option when you create Sales Analytics for the first time or when you want to create the app quickly.
- 4. Use the Sales Analytics Wizard Custom Create Option
  - Custom app creation gives more advanced Salesforce administrators fine-grained control over Sales Analytics features and data.
- 5. How to Answer Custom Wizard Questions
  - The custom version of the Sales Analytics configuration wizard asks you a series of questions about your data. Follow these general guidelines, and the specifics that follow, to get the best result.
- 6. Opportunities Questions, Sales Analytics Custom Wizard Step 5 of 9
  - Tell Sales Analytics how you prefer to view data from the Opportunities object.
- 7. Products Questions, Sales Analytics Custom Wizard Step 6 of 9
  - Tell Sales Analytics how you prefer to view data from the Opportunities object.
- 8. Questions To Fine Tune Sales Analytics, Custom Wizard Step 7 of 9
  - Answer questions about data visibility as well as account team, opportunity team, and record type data in Sales Analytics.
- 9. Questions About Leads Sales Analytics, Custom Wizard Step 8 of 9
  - Answer questions about how Sales Analytics displays data from the Leads object.
- 10. Bring Data into Sales Analytics, Custom Wizard Step 9 of 9
  - Optional questions that let you add data to Sales Analytics.

### SEE ALSO:

Create and Share the Sales Analytics App

## Sales Analytics Wizard Data and Feature Check

At the start of app creation, Sales Analytics scans your org. It checks to make sure you can create the app and looks for features and data to add to your app.

Sales Analytics checks your org for data and features when you open the configuration wizard. If it finds any issues you need to correct before creating the app, you see messages that tell you what

to do. Position your cursor over the tooltip for more information.

Here are details about each phase of the check.

# **USER PERMISSIONS**

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

### Minimum Requirements

To enable app creation, your org must have the following:

- At least one account, opportunity, task, and event.
- At least one event and one task connected with an opportunity.
- Three opportunity history rows.

If you see an error message, go to Sales Cloud, create the required record or row, and try creating the app again.

## Features to Add to Your App

The wizard checks to see if you track data about the following in your org:

- Opportunity Line Items
- Account Teams
- Opportunity Teams
- Cases
- Campaigns
- Leads
- Collaborative Forecasts
- Collaborative Forecasting Quota
- Opportunity Splits

The tooltip tells you which are available in your org. Basic app creation automatically adds those features. Custom app creation lets you choose the ones to add.

## Field-Level Security

The wizard checks if the Analytics Integration User has access to all fields needed to create the app using the basic create option. If the Integration User can't access all fields, you see a warning and the tooltip lists the fields that lack access. Go to Salesforce Setup and provide access to those fields. See Create and Share the Sales Analytics App, Step 8, for details. Until all fields are available, you can't use the basic create option.

### Salesforce Settings

The wizard looks for your org's settings for fiscal year start date and currency and uses them for Sales Analytics. It also checks to be sure your org has at least one account with a parent. If it does not, you see a warning.

### Additional Data Check

The wizard checks to see if your org uses Manager and Role Hierarchy. It uses that information to customize Sales Analytics dashboards. See Sales Analytics Dashboard Guide for details.

## Choose Sales Analytics Wizard App Creation Options

After Sales Analytics checks your org's data and features, choose between basics and custom app creation options.

Select **Basic** if you're using Sales Analytics for the first time. It sets up your app quickly based on standard settings determined by the org compatibility check. You get an immediately useful version of the app so you can see how it works. Experiment with it and share it with your team. Based on what you learn, change the standard settings by recreating the app using the custom create option.

Sales Analytics disables basic app creation if the Analytics Integration User can't access all required fields. If the basic option is disabled, click **Back** to return to the org check and follow the instructions in the field-level security tooltip and error message.

# **USER PERMISSIONS**

To create and manage Analytics apps:

- Manage Analytics
   Templated Apps
- Edit Analytics Dataflows

Select **Custom** and follow additional steps in the wizard to make your own, custom settings to reflect the way you and others on your team want to view data. The initial, default settings in the screens that follow are the ones used when you create an app using the basic create option. Custom create lets you vary these settings to meet your team's specific needs. You can choose to add or delete features detected by the org check. You can also make specific choices about the data used in the app's dashboards.

Whether you use basic or custom create, Sales Analytics runs a final scan of your org's field-level security settings. The scan detects if the Analytics Integration User has access to all data fields required to create the app. If the scan fails, you see a message telling you how to fix the issue. For more information about field-level security settings, see See Create and Share the Sales Analytics App, Step 8, for details.

## Use the Sales Analytics Wizard Basic Create Option

Select the basic app creation option when you create Sales Analytics for the first time or when you want to create the app quickly.

- Select Basic.
- Click Looks good, next.
- Name your app, and click **Create**.

#### **Basic create settings**

The basic create option uses data, features, and default settings detected in Salesforce during the compatibility check that runs when you start app creation. It uses the following when creating your app:

- Data from Opportunities, Accounts, Users, Tasks, and Events objects.
- Opportunity Line Items data, if the check detects more than 10 rows in the Opportunity Line Items table.
- Collaborative Forecasting data, if the check detects more than 10 rows in the Forecasting Item table.
- Opportunity Splits data, if the check detects more than 10 rows in the Opportunity Splits table.
- Leads data, if the check detects more than 10 rows in the Leads table.
- Account Hierarchy data, if the check detects at least one account with a parent account.
- Role hierarchy data, if the check detects at least one role with a parent role.
- Product Schedules data, if the check (detects at least 10 rows of data in the Opportunity Line Item Schedule table and you *do not use* Collaborative Forecasting or Opportunity Splits.

# USER PERMISSIONS

- Manage Analytics
   Templated Apps
- Edit Analytics Dataflows

Using the basic create enables users to view data owned by them and their subordinates. It also uses only standard fields. To use data not listed here, including custom fields, use the custom create option. See Use the Sales Analytics Wizard Custom Create Option Consult Create and Share the Sales Analytics App to learn the process for creating your app.

# Use the Sales Analytics Wizard Custom Create Option

Custom app creation gives more advanced Salesforce administrators fine-grained control over Sales Analytics features and data.

### Add Data and Features

The first window in the custom creation process lets you add data and features to your app. By default, Sales Analytics includes data from selected fields in the following standard Salesforce objects:

- Accounts
- Users
- Roles
- Opportunities
- Projects (Opportunities line item)
- Tasks
- Events

Custom app creation lets you choose some of the fields used in Sales Analytics dashboards.

The compatibility check that run at the start of app creation looks for other available data and features. The wizard displays the results on the first custom create window, letting you know which features you use in your org. If you use a feature, this window tells you if it's available to your app. If you don't use the feature, Sales Analytics tells you it's not available.

Sales Analytics preselects the features used for basic app creation. You have the option of adding others. Preselected options contain a check mark in the upper right corner. Add other available options to your app by clicking them. Click options with a check mark to deselect them. Here are the options Sales Analytics lets you add, if available, and details about adding each.

- **Products**. Select to add Product objects data to your app. If you select, Sales Analytics adds questions to the wizard that ask how to display Products data in the app.
- **Opportunity Splits**. Select to add data about how members of your team share revenue from an opportunity. If you select, Sales Analytics creates an Opportunity Splits dataset and uses the data in the following dashboards:
  - Company Overview
  - Forecast
  - Home
  - Leaderboard
  - Sales Overview Home (Embedded)
  - Team Benchmark

If you select, Sales Analytics adds questions to the wizard about how to display data about Opportunity Splits and total amount for products in the app. Do not select if you use Product Schedules.

Collaborative Forecasting. Preselected If your org uses the Sales Cloud Collaborative Forecasts feature, which automatically adds
quota information from Sales Cloud Collaborative Forecasts Quotas. If it's not preselected and you want to add quotas data to your
app, see Collaborative Forecasting and Quotas Data in Sales Analytics. With Collaborative Forecasting selected, Sales Analytics adds
questions to the wizard about how to display data about total amounts for opportunity and products in the app. Do not select if
you use Product Schedules.

# **USER PERMISSIONS**

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

- **Product Schedules**. Select if you sell products with scheduled payment contracts. Can only be selected if you do *not* select Opportunity Splits *or* Collaborative Forecasting. With Product Schedules selected, Sales Analytics adds a Product Schedules dataset and uses the data in all dashboards *except* the following:
  - Company Trending
  - Sales Stage
  - Team Trending
  - Trending
- **Leads**. Select to add Leads object data to your app. With Leads selected, Sales Analytics adds questions to the wizard about how to display data about leads in the app.
- **Cases**. Select to add Cases object data from the Service Cloud to your app. If you select, Sales Analytics adds service performance visualizations to the Executive Overview dashboard. See Sales Analytics Executive Service Performance. With Cases selected, Sales Analytics adds questions to the wizard about how to display data about cases in the app.
- **Campaigns**. Select to add Campaigns object data.

### **How to Answer Custom Wizard Questions**

The custom version of the Sales Analytics configuration wizard asks you a series of questions about your data. Follow these general guidelines, and the specifics that follow, to get the best result.

- Most questions provide answers in pick lists showing fields from Salesforce objects.
   The lists include standard Salesforce fields and any custom fields you've set up on an object.
   Answer these questions by selecting from the fields shown. Most questions of this type let you choose only one field, and some let you choose multiple fields.
- You can choose a field from an object only once. After you select a field, it's no longer available as an answer to other questions.
- Other questions are yes/no, provide a set of options, or require you to enter text.
- Questions marked with an asterisk (\*) require answers.
- **Using the default answers results in a useful set of dashboards.** If you're not sure what to select, use the answer that's preselected. Some questions do not have preselected answers. In those cases, Analytics reminds you to make a selection. If you're not happy with the result, you can delete the app and create it again.
- You control only parts of the app with wizard settings, such as the filters used in dashboards. We built the app to provide immediate value without much work on your part.
- Only some answers make sense given the question's context. The answer pick-lists contain many fields, but only some make sense for your app. For example, it's unlikely that you'd filter Accounts data by Photo URL, even though the Accounts object includes a Photo URL field.
- (1) Important: Fields that aren't available to the Analytics Integration User aren't visible in the wizard. See Schedule the Dataflow for an Analytics Template to give the Integration User access to all the fields you want your app to use.

Accounts Object Questions, Sales Analytics Custom Wizard Step 4 of 9

- Note: This page is labeled *Step 4 of 9*, even though it's the first page of questions you see after you select custom create. This is the fourth of nine steps for creating Sales Analytics with the custom option.
- Question 1, mandatory: Sales Analytics dashboards provide two filters for customer data from the Accounts object. Your answer to this question designates the field used in the first filter.
- Question 2, mandatory: Your answer designates the field used in the second customer data filter.

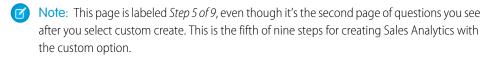
# **USER PERMISSIONS**

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

- Question 3, mandatory: Sales Analytics dashboards provide two filters for source data. Your answer designates the from Accounts to use for the first source filter. (The second pertains to the Opportunities object, which is covered in the next wizard page.)
- Question 4, mandatory: Sales Analytics dashboards provide two filters for customer geography data from the Accounts object, and your answer to this question designates the field used in the first filter.
- Question 5, mandatory: Your answer designates the field used in the second geography data filter.
- Question 6, mandatory: Your answer designates whether the app's dashboards include account hierarchy data. The Salesforce account hierarchy lets you view relationships between parent accounts and their subsidiaries.

## Opportunities Questions, Sales Analytics Custom Wizard Step 5 of 9

Tell Sales Analytics how you prefer to view data from the Opportunities object.



• The selections made on the page that lets you add data to the app determine the first question asked on this page. All are mandatory. See chart for details.

| Selections made on page that lets you add data to app   | Question contents   |
|---|---|
| <ul> <li>Add none of Collaborative<br/>Forecasting, Opportunity<br/>Splits, or Product<br/>Schedules.</li> <li>Add only Collaborative<br/>Forecasting.</li> </ul> | The question asks you to select the field used to display data about the total amounts of opportunities. Sales Analytics also checks to see if your org supports Historical Trending and displays results here. If you use a custom amount field, Sales Analytics instructs you to select that field. |
| <ul> <li>Add <i>only</i> Opportunity Splits.</li> <li>Add <i>both</i> Collaborative Forecasting <i>and</i> Opportunity Splits.</li> </ul>                         | The question asks you to select the opportunity type you use. Sales Analytics also checks to see if your org supports Historical Trending and displays results here. If you use a custom amount field, Sales Analytics instructs you to select that field.  |
| Add <i>only</i> Product Schedules.  | You see only questions 2 and 3 (below).   |

## **USER PERMISSIONS**

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

Note: To enable Historical Trending, go to Salesforce Setup, type Historical Trending in the Quick Find box. Select the Opportunity object and check the field(s) you want to enable. See Set Up Historical Trend Reporting

- Question 2, mandatory: Your answer designates the field used in the second source data filter, which comes from your opportunities. (The first pertains to the Accounts object, which is covered in the previous wizard page.)
- Question 3, required. Your answer determines the way dashboards identify that an opportunity in Salesforce is new business.

## Products Questions, Sales Analytics Custom Wizard Step 6 of 9

Tell Sales Analytics how you prefer to view data from the Opportunities object.

- Note: This page appears only if you select Products on the page that lets you add objects to Sales Analytics. It's labeled *Step 6 of 9*, even though it's the third page of questions you see after you select custom create. This is the sixth of nine steps for creating Sales Analytics with the custom option.
- Question 1, required. Your answer determines the field dashboards use to display data showing the total amount of a product on an opportunity. You see only questions 2 and 3 (below) if you select Product Schedules on the page that lets you add data to the app.
- Question 2, mandatory: Sales Analytics dashboards provide two ways of segmenting products data, for example by Product Family or Product Name. Your answer to this question designates the field used for the first method.
- Question 3, required. Your answer designates the the second method for segmenting products data.

## Questions To Fine Tune Sales Analytics, Custom Wizard Step 7 of 9

Answer questions about data visibility as well as account team, opportunity team, and record type data in Sales Analytics.

- Note: This page is labeled Step 7 of 9, even though it's the fourth page of questions you see after you select custom create. This is the seventh of nine steps for creating Sales Analytics with the custom option.
- Question 1: Lets you control user access to data in your app. Here are the available options:
  - Option 1 enforces Salesforce role hierarchy, which means that users can only see data in Opportunities and Accounts owned by them and their subordinates.
  - Option 2 enables team benchmarking. It lets users see data in Opportunities and Accounts owned by them and their subordinates.
     It also lets users see data from Opportunities and Accounts owned by others at the same level in the role hierarchy.
  - Option 3 lets all users see all Sales Cloud data regardless of role.
- Question 2, mandatory: Select how your app handles Account Team information. Defaults to Option 3, which excludes Account
  Team data. Select Option 1 to add Account Team member data to datasets or Option 2 to add Account Team data and grant record
  visibility to members of the team.
- Question 3, mandatory: Select how your app handles Opportunity Team information. Defaults to Option 3, which excludes Opportunity
  Team data. Select Option 1 to add Opportunity Team member data to datasets or Option 2 to add Opportunity Team data and grant
  record visibility to members of the team.
- Question 4, optional. Only appears if your app detects that you segment opportunities by record types. Choose record types and Analytics excludes *unselected* record types from datasets. Leave this question blank to include *all* record types.

## **USER PERMISSIONS**

To create and manage Analytics apps:

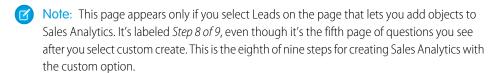
- Manage Analytics Templated Apps
- Edit Analytics Dataflows

## **USER PERMISSIONS**

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

## Questions About Leads Sales Analytics, Custom Wizard Step 8 of 9

Answer questions about how Sales Analytics displays data from the Leads object.



- Question 1, mandatory: Choose the field you use to track lead quality. Your answer determines the primary way Sales Analytics groups leads.
- Question 2, mandatory: Choose the field you use to segment leads by source. Your answer determines how Sales Analytics groups leads by source.
- Question 3, mandatory: Choose the field you use to segment leads by geography. Your answer determines how Sales Analytics groups leads by geography.
- Question 4, mandatory: Choose the field you use to segment leads by customer type. Your answer determines how Sales Analytics groups leads by customer type.

## Bring Data into Sales Analytics, Custom Wizard Step 9 of 9

Optional questions that let you add data to Sales Analytics.

- Note: This page is labeled *Step 9 of 9*, even though it's the sixth page of questions you see after you select custom create. This is the ninth of nine steps for creating Sales Analytics with the custom option.
- Question 1, optional: Add fields from the Accounts object to Sales Analytics datasets.
- Question 2, optional: Add fields from the Opportunities object to Sales Analytics datasets.
- Question 3, optional: Add fields from the User object to the Sales Analytics Users dataset.
- Question 4, optional: Add custom fields from the Event object to the Sales Analytics Activities dataset.
- Question 5, optional: Add fields from the Product object to the Sales Analytics Oppty Products dataset. This question appears only if you select Products on the page that lets you add data to the app.
- Question 6, optional: Add fields from the Leads object to the Sales Analytics Leads dataset. This question appears only if you select Leads on the page that lets you add data to the app.
- Question 7, optional: Add fields from the Cases object to the Sales Analytics Cases dataset. This question appears only if you select Cases on the page that lets you add data to the app.

# Delete the Sales Analytics App

Delete apps to start app creation all over or to get rid of apps you no longer use.

- (1) Important: If you delete your app, Analytics doesn't retain the wizard answers you selected for that version of the app. You have to start the creation process over. If you wish to reuse settings from the app, keep it until you've recreated the app and then delete it.
- 1. Navigate to Analytics Studio and open the app. Make sure you're viewing the app's landing page and that you can see the app name at upper left, with a list of dashboards in the center panel.
- 2. Click the triangle in the upper left corner and select **Delete**.

## **USER PERMISSIONS**

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

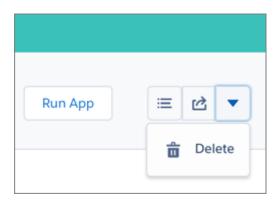
# **USER PERMISSIONS**

To create and manage Analytics apps:

- Manage Analytics
   Templated Apps
- Edit Analytics Dataflows

# **USER PERMISSIONS**

- Manage Analytics Templated Apps
- Edit Analytics Dataflows



- **3.** In the next screen, Sales Analytics asks you to confirm that you want to delete your app. If you are, click the **Delete XX Asset(s)** button.
- **4.** Analytics deletes your app.

## Upgrade the Sales Analytics App

Take advantage of the latest Sales Analytics features by upgrading your app whens we release a new version.

The banner at the top of your app home page tells you that we've released a new version. It also provides a link to more information about the release. There's also a link inviting you to start the upgrade process in the left-hand column of the home page, just below the app name.

Here's how to upgrade your app.

- 1. Click either the "What's new" link in the banner or the "New version available" link in the left-hand column of your app's home page.
- 2. You can read information about the new version on top of the page that opens. At the bottom of the page, find the buttons: **Upgrade current app** and **Create new app**.
- 3. See descriptions of what the buttons do by hovering over them. If you click **Upgrade current app**, you overwrite your current app and all its assets, replacing it with an app based on the new version. This also deletes any customizations, including any new fields or object you've added to the dataflow or changes you've made to security settings and dashboard labels and colors. If you click **Create new app**, you create a second copy of your current app based on the new version. Decide which option suits your circumstances, and click the appropriate button.
- **4.** Warning: If you've customized your app, click **Create new app** instead of **Upgrade current app** to make an app copy based on the new version. This preserves the current version and any customizations, which you can then manually copy into the new version of the app.

If you click **Upgrade current app**, you see a screen warning you that the upgrade option overwrites the current app and gets rid of any customizations you've made to it. If you're OK with that, check the box and click **Continue**. If you're not, click **Back** to return to the previous screen. Clicking **Continue** takes you to the configuration wizard. Skip ahead to step 6.

- **5.** If you click **Create new app**, you're taken to the configuration wizard. You don't see a warning, since you're not overwriting your current app, which is preserved with any customizations you've made to it.
- **6.** The configuration wizard is preloaded with the settings you chose last time you used the wizard. You can either keep those settings or change them. Go through each page of the wizard.
- 7. Once you complete the wizard, Analytics shows a screen that indicates which assets are impacted by the upgrade. Review the screen to see how many datasets, dashboards, and lenses will be changed, deleted, or added by the upgrade. It also shows how changed

# **USER PERMISSIONS**

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

assets will be modified—whether the change is to data or appearance. On the same screen, you have the option to download a file with code for changes made to the app. If you've customized the app, download and save the file so you can copy and paste customization code into the upgraded version.

- **8.** Upgrade option only: If you're upgrading your app, click **Upgrade current app**. Remember, this overwrites any customizations you've made. You can also click **Back** to go back into the configuration wizard and change your selections or click the **X** in the upper-right corner to cancel.
- **9.** Create option only: If you're creating a new app, name your app something different from the current version and click **Create new app**. This option saves your current app and all its customizations. You can also click **Back** to go back into the configuration wizard and change your selections or click the **X** in the upper-right corner to cancel.

If the link below the app name says "Reset app," you're using the latest version and don't need to upgrade.

# Reconfigure the Sales Analytics App

To restore deleted or altered dashboards or change wizard settings, reconfigure an existing app.

- (1) Important: Reconfiguring your app gets rid of dashboard customizations, including fields or objects added to the dataflow. It also deletes actions you enable, or changes to security settings and dashboard colors and labels. If you've made any customizations, save copies of your dataflow definition file or dashboards. Then copy them into your reconfigured app.
- 1. Navigate to Analytics Studio and open the app. Make sure you're viewing the app's landing page and that you can see the app name at upper left, with a list of dashboards below.
- 2. Click the **Reconfigure app** link below the app name. If you see **Upgrade** instead of **Reconfigure**, you need to upgrade to the new version of the app before you can use the reconfigure feature. See Upgrade the Sales Analytics App on page 711.
- **3.** Review the next screen carefully. It warns you that reconfiguring overwrites app customizations. If you're comfortable overwriting customizations, check the box and click **Continue**. If not, click **Back** or the **X** in the upper right corner.
- 4. Complete the app creation process described in Create and Share the Sales Analytics App on page 701.
- **5.** At the end of the process, you're asked to confirm that you want to reconfigure your app. This gives you one more chance to make sure you're comfortable overwriting customizations. If you are, click **OK**. Analytics creates a new version of your app.
- (1) Important: If you delete your app, Analytics doesn't retain the answers you selected when you created that version of the app, and you have to start the creation process all over again. If you wish to reuse settings from the app, keep it until you've completed recreating the app and then delete it.

# Collaborative Forecasting and Quotas Data in Sales Analytics

Sales Analytics gives you a choice for how to include your team's quotas depending on whether you use the Sales Cloud Collaborative Forecasts feature to store quotas data.

You have the following options for including quotas data in Sales Analytics.

## **Table 9: Sales Analytics Quotas Data Options**

| Option | Sales Cloud<br>Settings                             | Configuration Wizard Settings                | Additional Setup<br>Requirements         |
|--------|---|--|--|
| 1      | • Sales Cloud<br>Collaborative<br>Forecasts enabled | Select Collaborative<br>Forecasting in first | None. Sales Analytics automatically adds |

# **USER PERMISSIONS**

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

## **USER PERMISSIONS**

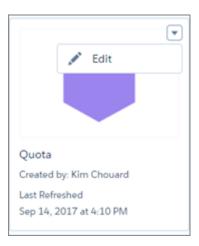
- Manage Analytics Templated Apps
- Edit Analytics Dataflows

| Option | Sales Cloud Settings   | Configuration Wizard<br>Settings  | Additional Setup<br>Requirements  |
|--------|--|---|---|
|        | Collaborative Forecasts includes forecast quota data.  | wizard screen that lets you add objects.  | quota data from the Forecasts object.   |
| 2      | <ul> <li>Sales Cloud Collaborative<br/>Forecasts enabled</li> <li>Collaborative Forecasts does<br/>not include forecast quota<br/>data.</li> </ul> | Select Collaborative Forecasting in first wizard screen that lets you add objects.                | Create .CSV file with quotas data, upload to Analytics, rerun dataflow. See instructions below. |
| 3      | Sales Cloud Collaborative<br>Forecasts <i>not</i> enabled  | No setting available. Wizard does not give you the option of adding Collaborative Forecasts data. | Create .CSV file with quotas data, upload to Analytics, rerun dataflow. See instructions below. |

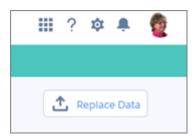
Wizard settings are optional, depending on whether you want to include Sales Cloud Collaborative Forecasts data in your app.

With Option 1, Sales Analytics automatically adds quotas data to your app and its dashboards. With Options 2 and 3, add quotas data to your app by following these instructions.

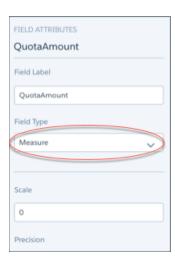
- Note: When you work with .CSV files you want to import to Sales Analytics, create and open them using only a UTF-8-compliant text editor. Opening them in Microsoft Excel or other spreadsheet software reformats .CSV files and makes them unusable in Sales Analytics
- (1) Important: When you create the .CSV file, be sure it contains the following fields, in this order, with exactly these names. Field names are case-sensitive:
  - 1. StartDate (in yyyy-mm-dd format)
  - 2. QuotaAmount
  - 3. OwnerName
  - 4. Username
- 1. Create a .CSV file to include the fields just described, that is StartDate (in yyyy-mm-dd format, QuotaAmount, OwnerName, Username. For an example, see Sales Analytics Example .CSV File.
- **2.** Save the file to a location that you can easily remember.
- 3. In Salesforce, go to the Analytics home page and find the Quota dataset.
- **4.** Click the arrow at the upper right corner of the dataset panel and select **Edit**.



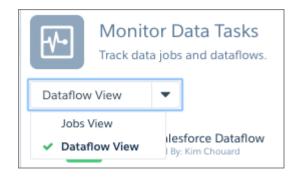
5. Salesforce displays the dataset editing screen for the Quota dataset. Look for **Replace Data** in the upper right corner and click it.



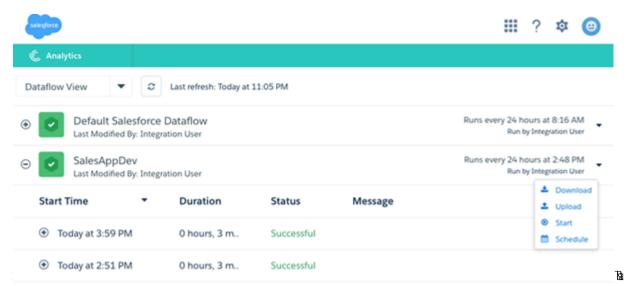
- **6.** In the dialog box that opens, navigate to the .CSV file you created in Step 1, and double-click it.
- 7. Click **Next** to open the Replace Dataset Data page.
- **8.** If your fiscal period is different than calendar period, that is if it starts on a date other than January 1, update the Quota Metadata file. If your fiscal period starts on January 1, skip to the next step.
  - a. Copy the JSON from Sales Analytics App Quota Dataset JSON File and paste it into a text editor of your choice.
  - **b.** Change the value of "fiscalMonthOffset" from 4 to a number that represents the month your fiscal period starts. In Sales Analytics metadata, the numeral "0" stands for January, "1" stands for February, and so on up to "11," which stands for December. Save the file to your desktop.
  - **c.** In Analytics Studio, go to the Replace Dataset Data page and locate the Data Schema File area of the page. Click the arrow next to Quota .JSON file, select Replace File, find the file you just saved and upload it to Analytics.
- **9.** On the Replace Dataset Data page, click **Next** to open the Edit Field Attributes page. The first column —QuotaAmount— should be selected. If not, select it. In the **Field Attributes** panel on the right, make sure **Field Type** is set to **Measure**.



- 10. Click **Upload**. You'll be asked to confirm that you want to replace the file. Click **Replace** to upload the file.
- 11. After uploading your quota data, rerun the dataflow to update the dashboards.
  - **a.** Click the Gear menu at the upper right of the Sales Analytics screen and select Data Manager.
  - **b.** Select Dataflow view from the menu at the top left of the Data Manager screen.



**c.** Find your app; you may have to scroll down the page. Open the menu on the far right of the screen next to the app icon and name, and click



it. The dataflow assures that Sales Analytics has your company's latest sales data. You can learn more about dataflows from Schedule the Sales App Daily Dataflow.

### IN THIS SECTION:

Sales Analytics Example .CSV File

Here's an example of the .CSV file you create to update the Sales Analytics Quota (Target) dataset.

Sales Analytics App Quota Dataset JSON File

Use this file to update the Sales Analytics Quota dataset with your fiscal year start date if it's not January 1.

## Sales Analytics Example .CSV File

Here's an example of the .CSV file you create to update the Sales Analytics Quota (Target) dataset.

- Note: This file is for example purposes only. Create a unique .CSV file with quota data for members of your team including the following fields:
  - QuotaAmount
  - StartDate
  - OwnerName
  - Username

Save the .CSV file in UTF-8 format. Field names are case-sensitive and must appear in your file exactly as shown here.

(1) Important: Do not open the .CSV file with Microsoft Excel or another spreadsheet application, which can corrupt the file format.

See Collaborative Forecasting and Quotas Data in Sales Analytics on page 712.

Example:

```
QuotaAmount, StartDate, OwnerName, Username
1700000,2017-04-01, Laura Garza, trailhead002@isaweso.me
1700000,2017-05-01, Laura Garza, trailhead002@isaweso.me
1700000,2017-06-01, Laura Garza, trailhead002@isaweso.me
1700000,2017-07-01, Laura Garza, trailhead002@isaweso.me
1700000,2017-08-01, Laura Garza, trailhead002@isaweso.me
1700000,2017-09-01,Laura Garza,trailhead002@isaweso.me
1700000,2017-10-01,Laura Garza,trailhead002@isaweso.me
1700000,2017-11-01,Laura Garza,trailhead002@isaweso.me
1700000,2017-12-01, Laura Garza, trailhead002@isaweso.me
1700000,2018-01-01, Laura Garza, trailhead002@isaweso.me
1700000,2018-02-01, Laura Garza, trailhead002@isaweso.me
1700000,2018-03-01,Laura Garza,trailhead002@isaweso.me
1700000,2018-04-01, Laura Garza, trailhead002@isaweso.me
1700000,2017-04-01, Irene Kelley, trailhead011@isaweso.me
1700000,2017-05-01, Irene Kelley, trailhead011@isaweso.me
1700000,2017-06-01, Irene Kellev, trailhead011@isaweso.me
1700000,2017-07-01, Irene Kelley, trailhead011@isaweso.me
1700000,2017-08-01, Irene Kelley, trailhead011@isaweso.me
1700000,2017-09-01, Irene Kelley, trailhead011@isaweso.me
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1700000,2018-02-01, Irene Kelley, trailhead011@isaweso.me
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1700000,2018-04-01, Irene Kelley, trailhead011@isaweso.me
1700000,2017-04-01, Julie Chavez, trailhead012@isaweso.me
1700000,2017-05-01, Julie Chavez, trailhead012@isaweso.me
1700000 2017-06-01 Julia Chavez trailhead0120isawaso me
```

### Sales Analytics App Quota Dataset JSON File

Use this file to update the Sales Analytics Quota dataset with your fiscal year start date if it's not January 1.

Copy the contents of this file into an editor of your choice and change the "fiscalMonthOffset" value (shown in **bold**) to the month your fiscal period begins. In metadata, the numeral "0" stands for January, "1" stands for February, and so on up to "11," which stands for December. In the code below, the number is set to "4", which stands for May. Use the number that represents the month your fiscal period begins. Then save the file and upload it to Sales Analytics following the instructions in Collaborative Forecasting and Quotas Data in Sales Analytics.

```
"precision": 18,
                 "defaultValue": "0",
                 "scale": 0
            },
                 "fullyQualifiedName": "StartDate",
                 "name": "StartDate",
                 "type": "Date",
                 "label": "StartDate",
                 "format": "yyyy-MM-dd",
 "fiscalMonthOffset": 4,
 "isYearEndFiscalYear": true
            },
                 "fullyQualifiedName": "OwnerName",
                 "name": "OwnerName",
                 "type": "Text",
                 "label": "OwnerName"
            },
                 "fullyQualifiedName": "Username",
                 "name": "Username",
                 "type": "Text",
                 "label": "Username"
            }
        ]
    }
]
```

### Schedule the Sales Analytics Daily Dataflow

Schedule a daily dataflow at a time outside standard business hours before you start exploring with Sales Analytics.

When you create Sales Analytics, the creation process includes a dataflow that imports the latest Sales Cloud data to Analytics. You can schedule the dataflow to be rerun every day to assure that your app uses up-to-date Salesforce data. Schedule the dataflow to take place sometime outside normal business hours so the dataflow doesn't interrupt your use of the app.



Note: The Sales Analytics dataflow runs only once when you create the app. Schedule it to run daily so the app uses the latest sales data.

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To create and manage Analytics apps:

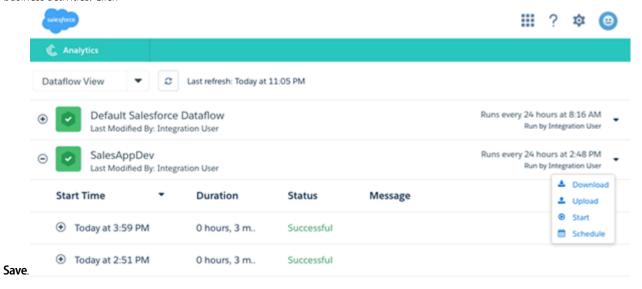
- Manage Analytics Templated Apps
- **Edit Analytics Dataflows**

You can also watch the video Create the Sales App, Part 2: Upload the Quota CSV File and Schedule a Dataflow (Lightning Experience), which covers the steps described here.

- 1. Go to Analytics if you're not already there. Open the Data Manager by clicking the gear icon at the upper right of the screen.
- 2. Select Dataflow view from the menu at the top left of the Data Manager screen.



**3.** Find the app you created; you may have to scroll down the page. Open the menu on the far right of the screen next to the app icon and name. Select **Schedule**, and set a time for the dataflow. Select a time outside normal work hours so the dataflow doesn't interrupt business activities. Click



## Integrate Sales Analytics With Salesforce

| USER PERMISSIONS                                  |  | EDITIONS  |
|---|--|---|
| To use Analytics templated apps:                  | Use Analytics Templated Apps                       | Available in Salesforce   |
| To use Sales Analytics:                           | Access Sales Cloud Analytics Templates and<br>Apps | Classic and Lightning Experience.                                       |
| To create and manage Analytics apps:              | Manage Analytics Templated Apps                    | Available for an extra cost in <b>Enterprise</b> , <b>Performance</b> , |
|   | Edit Analytics Dataflows                           | and <b>Unlimited</b> Editions. Also                                     |
| To edit a dataset's extended metadata (XMD) file: | Edit Analytics Dataflows                           | available in <b>Developer</b><br>Edition.                               |

Make Sales Analytics more usable by performing a variety of optional integrations and customizations.

Overriding role names in datasets, embedding the "Sales Analytics - Account Overview" dashboard in your Salesforce Accounts page, and expose Sales Analytics as a tab in Salesforce Classic can make it easier for your team to use the app.

### Add Actions to Sales Analytics Dashboards

Sales Analytics dashboards use actions that are enabled on the Account and Opportunity page layouts. To add actions, you edit the page layout for those objects.

In Salesforce, go to the Accounts or Opportunities tab, open the page for an account or opportunity, and click the **Edit Layout link** at the top right of the page.

In the Quick Actions in the Publisher section, click the **override the global publisher layout link**. If you or someone else in your org has already done this, you won't see the link. Note that this section may be called something slightly different in the org you use, for example "Quick Actions in the Salesforce Classic Publisher."

In the Account Layout or Opportunity Layout panel (depending on which object you're adding actions to) at the top of the page, click **Quick Actions** on the left. Drag the action(s) that begin with the word "New" (for example, New Task, New Note) to the Quick Actions in the Publisher section.



Click **Save** to save your changes. The actions you added to the layout are now available from charts and tables in Sales Analytics dashboards.

#### Override Role Name in Datasets

Sales Analytics uses Salesforce Role Hierarchy to help you to understand your company's sales performance. When you first create the app, Sales Analytics dashboards show the number associated with role name in the hierarchy. That's not the most useful way to view the role. To see the name of the person responsible for that role, you can update the role value by editing the corresponding dataset's Extended Metadata (XMD) file.

Let's say your role hierarchy is the following:

```
CEO (Manager: Paul)

Sales_WW (Manager: Yves)

Sales_WEST

Sales_EAST
```

To have the manager's name appear in Sales Analytics dashboards, update the Opportunity dataset XMD file with the following:

For more information, see Analytics Extended Metadata (XMD) Reference.

### Embed the Account Overview Dashboard in Account Page Layout

We've optimized the Sales Analytics Account Summary and Opportunity Summary dashboards to be embedded in the Salesforce Account page layout. You can do that by following the instructions in Embed Your Dashboard in a Salesforce Page.

To be able to filter the dashboard based on the account that you're viewing, use this string as filter:

```
{
    "opportunity1": {
        "AccountId": ["$Id"]
    }
}
```

opportunity1 corresponds to the system name of the Opportunity dataset. Its name can be different in your organization.

### Make Sales Analytics Available in a Salesforce Classic Tab

You can access Sales Analytics by going to Analytics in the Lightning Platform menu and selecting the app from the Analytics home page. To make it easier for your team to reach the app, you can expose it as a tab in Salesforce Classic. To do so, create a new tab that points to a Visualforce page that includes the "Sales Analytics - Overview" dashboard. Complete instructions are available in Add an Analytics Dashboard to a Visualforce Page.

## **Understand Sales Analytics App Limitations**

Sales Analytics requires that Sales Cloud include specific data and supports a limited set of Salesforce objects.

## Sales Analytics Limitations

These limitations apply to Sales Analytics.

#### Sales AnalyticsData Requirements

Sales Cloud data must meet the following requirements for Sales Analytics dashboards to function correctly:

- Use standard sales objects.
- Have at least one event and one task connected with an opportunity.
- Enable history tracking for Amount, Stage, and CloseDate fields on the Opportunities object.
- Cases must be connected to Accounts if you choose to import Cases data to Sales Analytics using the configuration wizard.
- There are two requirements if you choose to import Leads data to Sales Analytics using the configuration wizard.
  - 1. At least one lead must be converted to an opportunity.
  - **2.** The lead must be connected to an account.
- There are two requirements if you choose to import Campaigns data to Sales Analytics using the configuration wizard.
  - 1. At least one opportunity must be connected to a campaign.
  - 2. At least one campaign member must be connected to a campaign.
- There are two requirements if you choose to import opportunity record types to Sales Analytics using the configuration wizard.
  - 1. At least one opportunity record type must be defined.
  - **2.** The opportunity record type must be connected to at least one opportunity.

### Sales Analytics Support for Salesforce Objects and Fields

Sales Analytics supports all Salesforce standard and custom objects and data. To add custom objects or additional fields not included when you first create the app, you need to update the Sales Wave dataflow. For details see Create Datasets with the Dataflow.

When you first create the app it includes only a predefined set of objects and fields. Sales Analytics creates a dataflow that exposes selected fields from the following standard Salesforce objects:

- Accounts
- Users
- Roles
- Opportunities
- Products (Opportunities line item)
- Tasks
- Events

The fields provided are determined by the answers you provide when you create the app using the built-in configuration wizard.

Sales Analytics supports standard and custom fields on **standard Sales Cloud objects**. The fields provided are determined by the answers you provide when you create the app using the built-in configuration wizard.

### **Sales Analytics Support for Non-Salesforce Data**

Sales Analytics does not support external data sources except a CSV file that contains quota data at the user level. Importing other external data requires an extra license. See your Salesforce representative for details.

To include data about quotas in Sales Analytics, you must upload a CSV file with the details. For more information, see Collaborative Forecasting and Quotas Data in Sales Analytics.

#### **Other Contractual Sales Analytics Limitations**

The Sales Analytics Apps license does not support use of Einstein Analytics platform bulk actions or Apex steps functionality. This limitation is contractual, not technical. Licensee agrees to strictly monitor its use of Analytics platform features.

## Get to Know Sales Analytics Data Terminology

To make the best use of Sales Analytics, it's helpful to understand the metrics and terms used in the app.

**Table 10: Sales Analytics Dashboards** 

| Metric/Term       | Formula                  | Description/Notes   |
|-------------------|--------------------------|---|
| Closed Won        |                          | Amount of opportunities that have been closed and won.                |
| Closed Lost       |                          | Amount of opportunities that have been closed and lost.               |
| Closed Total      | Closed Won + Closed Lost | Total amount of opportunities that have been closed.                  |
| Quota             |                          | Amount that was planned/committed/targeted for a certain time period. |
| Quota Attainment  | Closed Won / Quota       | How much of quota has been achieved.                                  |
| Expected to Close | Many                     | Can use Forecast Category or Stage Name to calculate.                 |

| Metric/Term        | Formula                                | Description/Notes   |
|--------------------|--|---|
| Forecast           | Closed Won + Expected to Close         | Amount that is expected/outlooked to end at for a time period.  |
| Forecast to Quota  | Forecast / Quota                       | Ratio of forecast to quota.   |
| Need to Close      | Quota - Closed Won                     | Amount needed to hit quota.   |
| Need to Find       | Quota - Forecast                       | Amount needed to hit quota, after accounting for opportunities expected to close in the future.               |
| Open Pipe          |  | Total amount of open opportunities in the pipeline, where Forecast Category does not equal Closed or Omitted. |
| Open Pipe Coverage | Open Pipe / Need to Close              | How much in pipe to cover what is needed to close.  |
| Bookings           |  | Amount of Closed Won opportunities for new business.  |
| Diff               | This Year - Last Year                  | Difference between two items.   |
| Y / Y %            | (This Year / Last Year) - 1            | Year-over-year growth rate.   |
| Avg Selling Price  | Total Amount (\$) / Total Count (#)    | Average selling price for Opportunities, Products, and so on.   |
| Avg Win Rate by \$ | Closed Won / Closed Total              | Success rate on closed opportunities, based on amount (\$).   |
| Avg Win Rate by #  | Closed Won / Closed Total              | Success rate on closed opportunities, based on count (#).   |
| Avg Sale Cycle     | Closed Date - Created Date             | How long it took to close the deal.   |
| Avg Discount %     | abs ( (Selling Price / List Price)-1 ) | How much was reduced from what was listed.  |

# Service Analytics App

The Service Analytics app gets you started fast with Analytics and provides a clear path through your Service Cloud data on any device. Whether you're a service manager or agent, you get everything you need in one place to uncover key data insights to help you grow your business.



Tip: Follow the steps in the order shown to get started with Sales Analytics. If you haven't used Analytics before, learn more about it from the *Analytics Documentation*.

#### IN THIS SECTION:

### 1. About the Service Analytics App

Salesforce created the Service Analytics app to make it easy for service managers and agents to use data to drive the success of your service business. Learn the app's benefits before you create and use the app to explore your Service Cloud data.

#### 2. Service Analytics Prebuilt Dashboards and Datasets

The Service Analytics app includes prebuilt dashboards and datasets to accelerate data exploration for both service managers and agents.

#### 3. Set Up Permissions for the Service Analytics App

Set up your organization to use the Service Analytics app by enabling Analytics and creating and assigning permission sets.

#### 4. Create the Service Analytics App

Follow these steps to create the Service Analytics and start uncovering the value of your Salesforce data—fast.

### 5. Customize Service Analytics with the Configuration Wizard

Create Service Analytics with the configuration wizard so the app reflects how your company prefers to view Service Cloud data.

### 6. Share the Service Analytics App

Members of your team can only use the Sales Analytics app if you share it with them.

### 7. Reconfigure the Service Analytics App

To restore deleted or altered dashboards or change wizard settings, reconfigure an existing version of Service Analytics.

### 8. Delete the Service Analytics App

Delete apps to start app creation all over or to get rid of apps you no longer use.

### 9. Upgrade the Service Analytics App

Take advantage of the latest Service Analytics features by upgrading your app every time we release a new version.

#### 10. Schedule the Service Analytics Daily Dataflow

Schedule a daily dataflow at a time outside standard business hours before you start exploring with Service Analytics.

#### 11. Embed Service Analytics Sidebar Dashboards in a Salesforce Page

Add Service Analytics dashboards to Salesforce pages so your service team can get a complete view of their cases and take appropriate action.

#### 12. Understand Service Analytics App Limitations

Service Analytics requires that Service Cloud include specific data, initially supports a limited set of Salesforce objects, and has other miscellaneous limitations.

## About the Service Analytics App

Salesforce created the Service Analytics app to make it easy for service managers and agents to use data to drive the success of your service business. Learn the app's benefits before you create and use the app to explore your Service Cloud data.

## **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

## **USER PERMISSIONS**

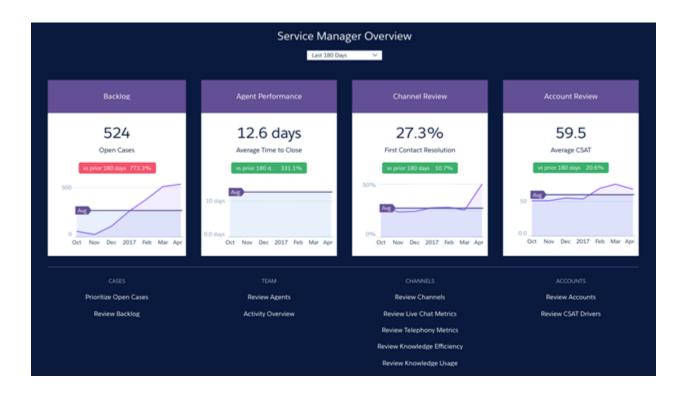
To use Analytics templated apps:

 Use Analytics Templated Apps

To use Service Analytics:

 Access Service Cloud Analytics Templates and Apps

- Manage Analytics
   Templated Apps
- Edit Analytics Dataflows



Service Analytics gives you best-practice key performance indicators (KPIs) about your Salesforce service data in a single place. We've based the app's dashboards on learnings from many years of helping businesses manage customer relationships. The goal is to provide the right amount of information at the right time to help both managers and agents make the right decision.

Service managers get a complete view of service customer data that includes trending as well as historical and peer benchmarks. Agents can quickly view a snapshot of each case and customer to help them make quick decisions about their next customer interactions.

We've done a lot of the hard work: Our team has built complex queries, formulas, and ratios that draw from your service and sales data and assembled them into easy-to-read visualizations. You just create the app: using a built-in configurator, answer a few questions about the data and fields you'd like to see, and Analytics takes care of the rest. Once you've created the app, use its prebuilt datasets and dashboards to explore Service Cloud data from any device that supports Analytics.

You get actionable insights fast from your data using the intuitive Analytics interface. And you can drill deeper into key aspects of your business by customizing Service Analytics around your needs.



**Note**: Your organization can use Service Analytics without Salesforce Analytics platform by purchasing a Service Analytics license. A Service Analytics license is included with the Analytics platform license.

## **Service Analytics Prebuilt Dashboards and Datasets**

The Service Analytics app includes prebuilt dashboards and datasets to accelerate data exploration for both service managers and agents.



**Note**: The dashboards and datasets included in your instance of Service Analytics can differ. The ones you see depend on how you answer configuration wizard questions when you create the app.

### Service Analytics Dashboards

The prebuilt dashboards in the Service Analytics app contain best practices that help you get value from your Salesforce data—fast. The dashboards let you manage pipeline and forecast and understand key business performance drivers, visualize trends, assign actions. They also help you get fast answers to questions you have about business results.

## **USER PERMISSIONS**

To use Analytics apps:

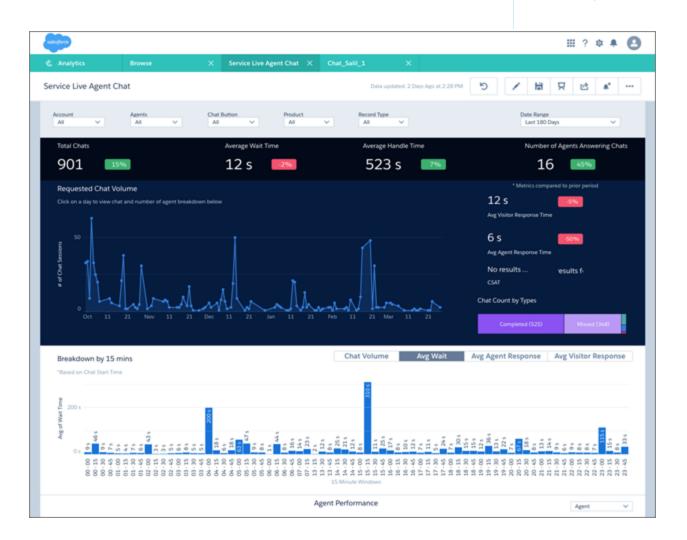
 Use Analytics Templated Apps

To use Service Analytics:

 Access Service Cloud Analytics Templates and Apps

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- Edit Analytics Dataflows



Dashboards available from the app provide a complete view of service customer data that includes all your key service performance indicators in one place. Managers can quickly view average case closing times, customer satisfaction, trending, and historical and peer

benchmarks. They can also get insight into the teams' use of knowledge to resolve cases and other data so they can quickly take appropriate action.

Another set of dashboards -- called sidebars -- are specifically for service agents. Embed sidebars in a Salesforce page, such as the service console, to make them more accessible to agents during their day-to-day work. For a given case, an agent can view customer history, number of cases, and CSAT. Agents can also see previous customer actions and their result so they can find out what worked. The goal is to provide agents the right amount of information at the right time to help them take the right action.

The following table guides you through Service Analytics dashboards. You can also explore further on your own at any point. To learn more about exploring data in Analytics, see Explore and Visualize Your Data on page 312.

**Table 11: Service Analytics Dashboards** 

|  | Table 11. Service Analytics Dashboards  |                 |
|--|---|-----------------|
| Dashboard Name   | Contents  | Target User     |
| Service Analytics Overview (Service Manager<br>Overview) | Start here. Summarizes key performance indicators (KPIs) from your Service Cloud, including open cases in the backlog, agent average time to close, and first contact resolution rate. Helps you gauge health of the business and surface issues requiring further investigation. Also, provides springboard to all other dashboards. | Service manager |
| Account Profile  | Provides a full breakdown of a selected customer's service history and current backlog and includes customer satisfaction (CSAT) data and trends. If you track Opportunity data, you can also see pending and closed deals.   | Service manager |
| Agent Activity   | Helps determine how well agents use their time. Shows how much work agents do and how their work aligns with case-closing numbers and duration as well as CSAT.   | Service manager |
| Agent Performance  | Shows agent and team performance against key activity and customer satisfaction metrics. Performance trends and benchmarks on agent performance help you provide direction and drive agent success.   | Service manager |
| Channel Review   | Shows CSAT and activities—duration and volume—on cases by channel to help you monitor success of each channel.  | Service manager |
| Backlog  | Gives complete view of your backlog to<br>show how efficiently your team resolves<br>cases and how quickly your backlog is<br>growing. Helps you prioritize and<br>acquire/assign resources accordingly.  | Service manager |

| Dashboard Name        | Contents   | Target User     |
|-----------------------|--|-----------------|
| Customer Satisfaction | Highlights CSAT measures so you can identify specific areas to improve the service experience. Indicates most/least satisfied customers and associates agents, products, and channels with CSAT.   | Service manager |
| Knowledge Impact      | Provides a view into how knowledge articles attached to cases impact CSAT and resolution time. See which agents used the most articles to determine who needs training/coaching in the use of knowledge to help resolve service issues                     | Service manager |
| Knowledge Use         | Helps you understand how agents use knowledge articles to help you drive article creation. See which articles are attached the most and the least and which have the most views or votes (high ratings) over time.   | Service manager |
| Live Agent Chat       | Shows how your team uses chat to help solve support cases. Includes number of chats, days of the week with most activity, missed or abandoned chats, chat length, and average handle time.   | Service manager |
| Omni                  | Gives managers insight into agent utilization based on Omni-Channel work record tracking. Includes incoming agent work volume, average speed to answer, average handle time, average active time, and other agent utilization metrics.                     | Service manager |
| Open Cases            | Shows current open case workload to help you prioritize, investigate problematic cases, and view escalations and SLA compliance. Let's you prioritize cases by accounts and pending deals so you can take appropriate action.                              | Service manager |
| Telephony             | Helps you understand the impact of telephone contact with customers during service case resolution. Filter call volume and duration by inbound or outbound call, the result of the call, and other factors. Also relates call volume to agent performance. | Service manager |
| Sidebar – By Customer | Provides a snapshot of customers, including<br>the service products they're using, case<br>reason, and priority. Also shows which  | Service agent   |

| Dashboard Name            | Contents  | Target User   |
|---------------------------|---|---------------|
|                           | agents have helped customers and provides a CSAT overview.  |               |
| Sidebar – By Similarity   | Shows a snapshot of historical data to help guide further customer interactions. Shows if there are other cases similar to the ones they're resolving. Helps agents identify potential product issues or candidates for creating knowledge and find agents who have worked similar cases.   | Service agent |
| Sidebar – By Case History | Gives an overview of case history or lifecycle so agents can be more informed during customer conversations. Includes a snapshot of case interactions and duration of case against the average.   | Service agent |
| My Performance Summary    | Gives agents visibility to their own productivity so they're always aware of their results towards targets as tracked in Salesforce. Includes ranking within the support center, trends, and benchmarking so they're always prepared for meetings with managers and reviews. Typically results in higher agent satisfaction and performance and lower turnover rates. | Service agent |

## Service Analytics Datasets

The table lists all the possible standard datasets that become part of Service Analytics when you create the app.

**Table 12: Service Analytics Datasets** 

| Dataset Name            | Contents   |
|-------------------------|--|
| Service Activity        | Replaces Service Event and Service Task datasets used in Classic version of app. Data about events and tasks associated with cases, including last modified date and case duration. (Your Service Cloud data must include at least one event and one task for Service Analytics dashboards to function correctly.) |
| Service Case            | Data about cases, including duration, last modified date, and customer satisfaction measure.   |
| Service Case History    | Data about case history, including owner, type, and creation date.   |
| Service Chat Transcript | One of two Service Analytics datasets with data about your team's use of LiveAgent for chat. Includes data from Live Agent transcripts, such as response times, numbers of messages per chat, and chat duration.   |

| Dataset Name                                    | Contents  |
|---|---|
| Service Chat Transcript Event                   | One of two Service Analytics datasets with data about your team's use of LiveAgent for chat. Includes data about Live Agent events, such as if chats are accepted, queued, declined, or transferred.  |
| Service Knowledge                               | Data about use of knowledge articles in cases, such as number of views, ratings, last referenced dates, and case associations.  |
| Service Knowledge Attached                      | Data about attachment of knowledge articles to cases including whether articles are shared by email, article version number, and case type.   |
| Service Omni Agent Work                         | One of two Service Analytics datasets with data from Omni-Channel Agent Work object. Includes data that helps you track information about the assignments your agents work on, including the queue, channel, status, and speed to answer. (Your org must use Omni-Channel to create and route work items for Service Analytics to create this dataset. You must also answer Yes to the configuration wizard question about Omni-Channel.) |
| Service Omni User Presence                      | One of two Service Analytics datasets with data from Omni-Channel User Presence object. User presence records contain fields that help you track information about agent availability. (Your org must use Omni-Channel to create and route work items for Service Analytics to create this dataset. You must also answer Yes to the configuration wizard question about Omni-Channel.)  |
| Service Opportunities                           | Data about opportunities so you can filter cases by opportunity for prioritization and appropriate action.  |
| Service Event (Only in Classic version of app.) | Data about events associated with cases, including last modified date and case duration. (Your Service Cloud data must include at least one event for Service Analytics dashboards to function correctly.)  |
| Service Task (Only in Classic version of app.)  | Data about tasks associated with cases, including last modified date and case duration. (Your Service Cloud data must include at least one task for Service Analytics dashboards to function correctly.)  |

## Set Up Permissions for the Service Analytics App

Set up your organization to use the Service Analytics app by enabling Analytics and creating and assigning permission sets.

Each Service Analytics App license is a single-user license that provides access to Service Analytics. It includes a single Service Analytics app single-user license. The table shows data storage limits for the app. If you require more data, you can purchase Analytics Cloud - Additional Data Rows, which entitles you to an additional 100 million rows.

## **USER PERMISSIONS**

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

**Table 13: Service Analytics Data Storage Limits** 

| License                                 | Limit   |
|---|---|
| Analytics Cloud - Service Analytics App | 25 million rows when used without Analytics Platform license. Use of Service Analytics app license does not increase data limit for platform license. |
| Analytics Cloud - Additional Data Rows  | 100 million rows.   |

(1) Important: Service Analytics App license data storage limits are contractual, not technical. Licensee agrees to strictly monitor its total number of data rows.

Your org can use the Service Analytics app with or without the Salesforce Analytics platform.

Each Service Analytics user needs a Service Analytics Apps permission set license. The Service Analytics Apps permission set license enables the following permissions.

**Table 14: Service Analytics User Permissions** 

| Permission  | Function  |
|---|---|
| "Use Analytics Templated Apps"                      | Enables access to all Analytics templated apps.   |
| "Access Service Cloud Analytics Templates and Apps" | Provides specific access to the Service Analytics app as well as the data and prebuilt dashboards included with it. |
| "Manage Analytics Templated Apps"                   | Gives admins the ability to create Analytics apps for users in their orgs, in this case the Service Analytics app.  |
| "Edit Analytics Dataflows"                          | Enables admins to upload and download JSON for existing data flows.   |

You assign the Service Analytics Apps permission set license when you create and assign permission sets to users in your organization.

#### **Service Analytics App Setup Process**

To set up your organization to use Service Analytics, follow these steps:

- 1. Enable Analytics for your organization.
- 2. Define the main Service Analytics user types in your organization.
- **3.** Create permission sets to group related user permissions according to the needs of each user type. When you create permission sets, you also select the Service Analytics Apps permission set license.
- **4.** Assign a permission set to an individual user, which also *auto-assigns* the Service Analytics Apps permission set license to that user. For efficiency, you can assign a permission set to groups of users. You can assign multiple permission sets to a user.

After you've completed these steps, create and share Service Analytics with the users in your organization. Users can only explore Service Analytics dashboards and datasets after you've shared the app with them.

[] Tip: For best results, follow the steps for setting up the Service Analytics app in the order shown here.

#### IN THIS SECTION:

- 1. Identify Service Analytics App User Types
  Identify Service Analytics user types and the tasks they perform to assure that the setup process meets your team's analytics needs.
- 2. Enable Analytics and Create Service Analytics Permission Sets
  After Salesforce provisions you with the Service Analytics App license, enable Analytics and create permission sets for Service Analytics users.
- 3. Assign Service Analytics Permission Sets to Users

  Assign permission sets to one or more Service Analytics users—either one at a time, or in bulk—to give them access to the app.

### Identify Service Analytics App User Types

Identify Service Analytics user types and the tasks they perform to assure that the setup process meets your team's analytics needs.

The Service Analytics App license includes the permissions required by users in your organization to administer Service Analytics and to import, work with, and explore data. Set up the Service Analytics in the most useful way by thinking through the ways people access features and categorizing users into types. Here are a few examples.

In most cases, Service Analytics addresses the needs of two basic types of people on your team:

- Users, who view Service Analytics dashboards and datasets.
- Administrators or managers, who access all Service Analytics functionality to create apps, dashboards, and datasets, import data, and otherwise customize the Service Analytics experience.

Accordingly, when you set up Service Analytics, creating two basic permission sets probably meets the needs of most users in your organization:

- A "view" permission set that contains the permissions needed by most basic-level users when they access Service Analytics.
- A "manage" permission set that's reserved for a select few administrators and managers and contains permissions to use all Service Analytics features.

In the detailed Service Analytics app setup instructions that follow, we show you how to create and assign these two permission sets.

### Enable Analytics and Create Service Analytics Permission Sets

After Salesforce provisions you with the Service Analytics App license, enable Analytics and create permission sets for Service Analytics users.

#### **Enable the Analytics Platform**

To use Service Analytics, first enable Analytics for your organization.

- 1. In the Salesforce Setup menu, under administer, click **Analytics** > **Getting Started**.
- 2. Click Enable Analytics.

#### **Create Permission Sets**

The next step in the setup process is to create permission sets made up of Service Analytics user permissions. We show you how to create two permission sets:

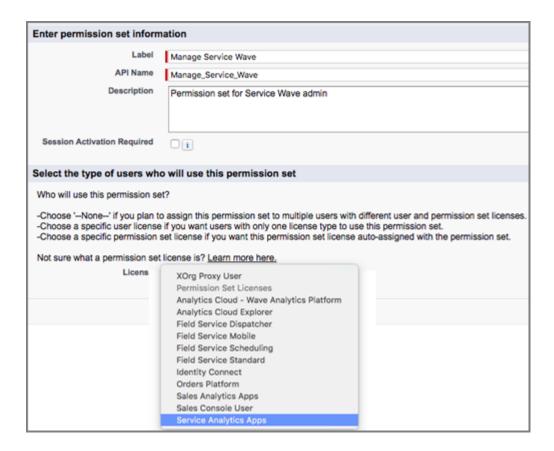
- Manage Service Analytics permission set, for users who create and administer Service Analytics.
- View Service Analytics permission set, for users who explore app dashboards and datasets.
- 1. Create a Manage Service Analytics permission set, which gives users access to all app features.
  - a. In the Setup menu, under administer, click Manage Users | Permission Sets and then click New.

## **USER PERMISSIONS**

To create permission sets:

Manage Profiles and Permission Sets

- **b.** Enter Manage Service Analytics in the Label field, which automatically creates the API name, as well. You can change the API name, but it can't include spaces, end with an underscore, or have two consecutive underscores. You can also enter a description, but it's optional.
- **c.** For License, select the license to associate with this permission set. In this case, select Service Analytics Apps in the Permission Set License section.



When you select a specific permission set license, any user assigned to the permission set is *auto-assigned* the permission set license. If you select --None--, you must *manually* assign the permission set license to users before you can add them to the new permission set.

- **d.** Click **Save**. The Permission Set Overview page shows the new permission set. Now add user permissions to the set.
- e. Click **System Permissions** to open the list of user permissions enabled by the Service Analytics license. Then click **Edit**.
- **f.** Select the following user permissions: "Use Analytics Templated Apps," "Access Service Cloud Analytics Templates and Apps," "Manage Analytics Templated Apps," and "Edit Analytics Dataflows." Make sure to select all four. Click **Save**. You've successfully created a permission set that enables users to create and administer Service Analytics and access all app features. You can now assign it to users, which is covered in Assign Service Analytics Permission Sets to Users.
- **2.** To create a View Service Analytics permission set, which enables users to view app dashboards and datasets, repeat the steps to create a Manage Service Analytics permission set, with these exceptions:
  - a. Name the permission set View Service Analytics.
  - **b.** Select only the "Use Analytics Templated Apps" and "Access Service Cloud Analytics Templates and Apps" user permissions and click **Save**. You've successfully created a permission set that enables users to view the Service Analytics dashboards and datasets. You can now assign it to users, which is covered in Assign Service Analytics Permission Sets to Users.

You can build other permission sets out of the individual permissions enabled by the Service Analytics App license, depending on the needs of users in your organization.

### Assign Service Analytics Permission Sets to Users

Assign permission sets to one or more Service Analytics users—either one at a time, or in bulk—to give them access to the app.

1. In the Setup menu, under administer, click **Manage Users | Permission Sets**.

Warning: Assign the Manage Service Analytics permission set sparingly because it lets users administer Service Analytics, which lets them create, edit, and delete the app. Assign it only to users who administer or manage the app.

## **USER PERMISSIONS**

To assign a permission set to users:

Assign Permission Sets

Click the permission set you want to assign to users. If you've followed the instructions in Enable Analytics and Create Service Analytics Permission Sets on page 733, select either the Manage Service Analytics or View Service Analytics permission sets.

- 3. Click Manage Assignments and click Add Assignments.
- **4.** Select the users who need to manage or use Service Analytics, and click **Done**. When you assign the permission set to users, Salesforce *auto-assigns* the Service Analytics Apps *permission set license* to those users.

After you've completed these steps, create and share Service Analytics with the users in your organization. Users can only explore Service Analyticsdashboards and datasets after you've shared the app with them.

### Create the Service Analytics App

Follow these steps to create the Service Analytics and start uncovering the value of your Salesforce data—fast.

For rapid app creation, choose the basic creation option, which uses default settings to create Service Analytics. To set up the app according to your team's specific Service Cloud analytics requirements, choose custom creation.

- 1. Log in to Salesforce.
  - Important: Service Analytics requires that your org has at least one closed case and one task. It also requires that your org has at least one contact ID associated with a case.

## **USER PERMISSIONS**

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- Edit Analytics Dataflows
- 2. Set Salesforce field-level security to enable the Analytics Integration User to see all fields you'd like your app to use. Integration users run the dataflow, and if they don't have proper field-level security permissions, the dataflow can fail.
  - **a.** Go to Setup and enter the name of an object—for example, Accounts or Cases—in the Quick Find box and hit Enter.
  - **b.** Click the name of the object.
  - c. The next window shows all the fields for the object. Go to the one(s) where you need to edit field-level security.
  - d. Look for the Analytics Cloud Integration User, check the box(es) for the required fields under Visible, and click Save.
  - **e.** Repeat the Steps a through d for all objects with fields you want to use.
  - **f.** Refresh your browser cache.

3.

Select **Analytics Studio** from the **App Launcher** 



- **4.** If you've created an app before: Choose between creating a brand new app or creating an app based on settings from a previously-created app. Click **Continue**. Service Analytics scans your org's data and features. For details about the scan, see Checking Data and Features with the Service Analytics Configuration Wizard.
  - 1 Tip: If you want to create your app with different settings, repeat the previous steps and select the previously-created app here. Complete app creation choosing different wizard settings and give your app a new name.
- 5. If the scan detects your org is missing required data, Service Analytics displays error messages telling you what to do. Follow the instructions and start app creation again. Position your cursor over tooltips to see more detail. If there are no errors, click **Looks** good, next.
- **6.** Choose between basic and custom creation options to set up your app. Select **Basic** to set up your app quickly based on standard settings determined by the org data check. Select **Custom** to open the configuration wizard. The wizard helps fine-tune app setup to reflect the way your team wants to view data. See Customize Service Analytics with the Configuration Wizard.
- 7. If you choose **Basic**: Click **Looks good, next**. Answer the question about the field you use to categorize cases. Click **Looks good, next**, and skip to Step 10. See Service Analytics Wizard Basic Create Option.
- **8.** If you choose **Custom**: The wizard asks you to choose Salesforce objects to add to Service Analytics. It then takes you through a set of questions about how you prefer to view data. See Service Analytics Wizard Custom Create Option on page 739.
- **9.** Give your app a name that's easily recognizable to others in your company and click **Create**. That starts a dataflow,which creates the app and its assets (a dataflow definition file, datasets, and dashboards). The app creation process can take a few minutes. During that process, Service Analytics runs a final scan to be sure the Analytics Integration User has access to all fields you select in the wizard. If the scan fails, you see an error message with the fields that can't be accessed. Return to Step 2 and give the Integration User access to those fields.
- **10.** You can check the status of the dataflow while you wait. In Analytics Studio, click the gear menu at the upper right of the page, and select **Data Manager**. From the pulldown menu, select **Dataflow View** and look for your app.

Taking a few extra steps can make Service Analytics better serve the needs of your organization:

- Embed the sidebar dashboards on page 748 in a Salesforce page of your choice, such as the service console. This step provides a seamless analytics experience for service agents. Embedding sidebars in pages used regularly by agents gives them access to key metrics as part of their regular work to help the take the most effective customer action.
- Add datasets to the app based on Salesforce data using the Analytics dataset builder on page 194. Service Analytics includes a default set of datasets based on your Salesforce data. Creating additional datasets lets your service managers and view other Salesforce data through the app.
  - Note: Service Analytics does not support data sources external to Salesforce or registering new datasets from the app-generated dataflow.
- Add objects, fields, and filters to Service Analytics. Edit the app's dataflow on page 110 to include standard and custom objects and fields from Salesforce. For complete instructions about adding data to Analytics, see Analytics Data Integration Guide.
- (1) Important: When users are deactivated, they lose share and delete access to all apps they manage. To avoid "stranding" an app, be sure that manager access is assigned to at least one active user BEFORE deactivating the user who's the manager of the app.
- Note: To create new datasets with just the Service Analytics app license, use the Analytics dataset builder. Analytics associates new datasets created using the builder with the Analytics default dataflow. If you edit the dataflow for the Service Analytics app to register new datasets, you can't access the resulting datasets.

## Customize Service Analytics with the Configuration Wizard

Create Service Analytics with the configuration wizard so the app reflects how your company prefers to view Service Cloud data.

When you start the app creation process, Service Analytics opens the configuration wizard. The wizard guides you through the following steps.

- 1. Checks your org to be sure it meets minimum data requirements and to detect features that can be added to your app. The results let you know if you have to add data or change Salesforce settings to create the app. It also lets you know about available features.
- **2.** Asks you to choose between basic and custom create options. Basic is intended for first-time app users, while custom lets experienced administrators fine-tune app setup.
- **3.** Choose the basic option, and Analytics creates the app quickly with default settings.
- **4.** Choose custom and the wizard guides you through the steps to fine-tune your app.
  - **a.** Add features to your app
  - **b.** Answer a series of questions about how you use data in your org.

The following provide details about each using each part of the wizard. Read them in the order shown to get the best results when you

create Service Analytics. Click the question mark



in the top-right corner of each page of the wizard to see help for that page.

#### IN THIS SECTION:

1. Service Analytics Wizard Data and Feature Check

At the start of app creation, Service Analytics scans your org. It checks to make sure you can create the app and looks for features and data to add to your app.

2. Choose Service Analytics Wizard App Creation Options

After Service Analytics checks your org's data and features, choose between basics and custom app creation options.

3. Use the Service Analytics Wizard Basic Create Option

Select the basic app creation option when you create Service Analytics for the first time or when you want to create the app quickly.

4. Use the Service Analytics Wizard Custom Create Option

Custom app creation gives more advanced users fine-grained control over Service Analytics features and data.

5. How to Answer Service Analytics Custom Wizard Questions

After you add features to Service Analytics, the custom version of the configuration wizard asks you a series of questions about your data. Follow these general guidelines, and the specifics that follow, to get the best result.

6. Data Drilldown Questions, Service Analytics Custom Wizard Step 5 of 6

Tell Service Analytics how you prefer to drill down into data about cases, including category, type, severity, owner, and reason, and if they're resolved at first contact.

7. Questions About Added Features, Service Analytics Custom Wizard Step 6 of 6

Provide more specifics about how Service Analytics uses data from the features you added to the app.

8. Set Up Service Analytics CSAT Metrics: Example

This scenario provides detail to help you answer questions about CSAT data in Step 6 of the Service Analytics configuration wizard.

## USER PERMISSIONS

- Manage Analytics
   Templated Apps
- Edit Analytics Dataflows

### Service Analytics Wizard Data and Feature Check

At the start of app creation, Service Analytics scans your org. It checks to make sure you can create the app and looks for features and data to add to your app.

Service Analytics checks your org for data and features when you open the configuration wizard. If it finds any issues you need to correct before creating the app, you see messages that tell you

what to do. Position your cursor over the tooltip for more information.

Here are details about each phase of the check.

## **USER PERMISSIONS**

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

#### Minimum Requirements

Your org must have at least one closed case and one closed task to enable app creation. If you see an error message, go to Service Cloud, close a case and a task, and try creating the app again.

### Features to Add to Your App

The wizard checks to see if you track data about the following in your org:

- Customer satisfaction (CSAT)
- Knowledge
- Case history
- Opportunity
- Queues
- Events
- Business hours
- Case record types
- Opportunity record types
- Telephony
- Live Agent chat
- Omni-Channel

The tooltip tells you which are available in your org. Basic app creation automatically adds those features. Custom app creation lets you choose the ones to add.



Note: CSAT and knowledge data can only be added using custom app creation.

### Field-Level Security

The wizard checks if the Analytics Integration User has access to all fields needed to create the app using the basic create option. If the Integration User can't access all fields, you see a warning and the tooltip lists the fields that lack access. Go to Salesforce Setup and provide access to those fields. See Create the Service Analytics App on page 735, Step 2, for details. Until all fields are available, you can't use the basic create option.

#### Fiscal Calendar Setting

The wizard looks for your org's fiscal year start date and uses it for Service Analytics. To choose a different fiscal start date, use the app's Custom create option.

### **Choose Service Analytics Wizard App Creation Options**

After Service Analytics checks your org's data and features, choose between basics and custom app creation options.

Select **Basic** if you're using Service Analytics for the first time. It sets up your app quickly based on standard settings determined by the org compatibility check. You get an immediately useful version of the app so you can see how it works. Experiment with it and share it with your team. Based on what you learn, change the standard settings by recreating the app using the custom create option.

Service Analytics disables basic app creation if the Analytics Integration User can't access all required fields. If the basic option is disabled, click **Back** to return to the org check and follow the instructions in the field-level security tooltip and error message.

## **USER PERMISSIONS**

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

Select **Custom** and follow additional steps in the wizard to make your own, custom settings to reflect the way you and others on your team want to view data. The initial, default settings in the screens that follow are the ones used when you create an app using the basic create option. Custom create lets you vary these settings to meet your team's specific needs. You can choose to add or delete features detected by the org check. You can also make specific choices about the data used in the app's dashboards.

Whether you use basic or custom create, Service Analytics runs a final scan of your org's field-level security settings. The scan detects if the Analytics Integration User has access to all data fields required to create the app. If the scan fails, you see a message telling you how to fix the issue. For more information about field-level security settings, see See Create the Service Analytics App, Step 2.

### Use the Service Analytics Wizard Basic Create Option

Select the basic app creation option when you create Service Analytics for the first time or when you want to create the app quickly.

The basic create option uses data, features, and default settings detected during the compatibility check that runs when you start app creation.

The wizard asks you a single, required question about the field you use to categorize cases. Choose the name of the field your business uses most to identify and organize cases, such as service product, type or level. Then click **Looks good, next**.

Name your app, and click **Create**.

**USER PERMISSIONS** 

To create and manage Analytics apps:

- Manage Analytics
   Templated Apps
- Edit Analytics Dataflows

Basic create can't use customer satisfaction and knowledge data. Service Analytics requires more information about how they're used in your org before creating an app. To add them, use the custom create option, and the wizard asks for the required details.

Basic create uses the following settings:

- To identify cases by geography, the Billing State/Province field from the Accounts object.
- Fifty (50) seconds as the maximum time agents can keep customers waiting during phone calls.

To vary these settings based on how you use Service Cloud, select the custom create option.

Consult Create the Service Analytics App on page 735 for details about creating your app.

### Use the Service Analytics Wizard Custom Create Option

Custom app creation gives more advanced users fine-grained control over Service Analytics features and data.

#### Add Data and Features

The first window in the custom creation process lets you add data and features to your app. By default, Service Analytics includes data from the following standard Salesforce objects:

### **USER PERMISSIONS**

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

- Account
- Cases
- Contact
- User
- UserRole
- Task

The compatibility check that run at the start of app creation looks for other available data and features. The wizard displays the results on the first custom create window, letting you know which features you use in your org. If you use a feature, this window tells you its available to your app. If you don't use the feature, Service Analytics tells you it's not available.

Service Analytics preselects the features used for basic app creation. You have the option of adding others. Preselected options contain a check mark in the upper right corner. Add other available options to your app by clicking them. Click options with a check mark to deselect them. Here are the options Service Analytics lets you add, if available, and details about adding each.

- **Customer Satisfaction (CSAT) Score**. Select to add CSAT data to your app. If you select, Service Analytics adds questions to the wizard that ask how you track CSAT data. See Questions About Added Features, Service Analytics Custom Wizard Step 6 of 6.
- **Knowledge**. Select to add Salesforce knowledge data to your app. If you select, Service Analytics adds questions to the wizard that ask how you track knowledge data. See Questions About Added Features, Service Analytics Custom Wizard Step 6 of 6.
- **Business Hours**. Select to add a business hours case duration calculation to datasets. This uses data from the Business Hours field in the Cases object. Be sure that the Analytics Integration User has access to this field by editing field-level security for the Cases object, as described in Create the Service Analytics App, Step 2.
- Case History. Select to include historical tracking for both case owner and for the field selected in wizard Page 5, Question 4. See Data Drilldown Questions, Service Analytics Custom Wizard Step 5 of 6.
- Case Record Types. Select to add record type for the Cases object. If you select, Service Analytics lets you filter cases by record type.
- **Queues**. Select to add queues data from the Group object, which your org uses to assign case ownership. If you select, Service Analytics lets you filter cases by user and queues.
- **Opportunities**. Select to add data from the Opportunities object, which is connected to cases via accounts in your org. If you select, Service Analytics adds sales data to dashboards to give you a complete view of accounts.
- **Opportunity Record Types**. Select to add record type from the Opportunities object. If you select, Service Analytics lets you filter opportunities by record type.
- **Events**. Select to add data from the Events objects, which your org uses to track case activity. If you select, Service Analytics includes events data and combines it with tasks data so you can drill into cases by activities (that is, tasks and events).
- **Telephony**. Select to add telephony data from standard call fields in the Tasks object. Standard fields include call duration, call object identifier, call result, and call type. If you select, Service Analytics creates the Telephony dashboard showing data from those fields.
- **Live Agent Chat**. Select to add Live Agent chat data. If you select, Service Analytics creates the Chat dashboard and dataset based on Live Agent data.
- **Omni-Channel**. Select to add data from Omni-Channel, which your org uses to create and route work items. If you select, Service Analytics creates the Omni-Channel dashboard and dataset.

### How to Answer Service Analytics Custom Wizard Questions

After you add features to Service Analytics, the custom version of the configuration wizard asks you a series of questions about your data. Follow these general guidelines, and the specifics that follow, to get the best result.

- Most questions provide answers in pick lists of fields from Salesforce objects. The lists include standard Salesforce fields and custom fields you've set up on an object. Answer these questions by selecting from the fields shown. Most questions of this type let you choose only one field, and some let you choose multiple fields.
- You can choose a field from an object only once. After you select a field, it's no longer available as an answer to other questions.
- Other questions are yes/no (Boolean), provide a set of options, or require you to enter text.
- Questions marked with an asterisk (\*) require answers.
- **Default answers result in a useful set of dashboards.** If you're not sure what to select, use the answer that's preselected. Some questions do not have preselected answers. In those cases, Service Analytics reminds you to make a selection.
- You can only control parts of the app with wizard settings, such as filters and widgets. We built the app to provide immediate analytics value without much work on your part.
- Only some answers make sense given the question's context. The questions often contain many fields, but only some make sense for your app. For example, it's unlikely that you'd filter Accounts data by Photo URL, even though the Accounts object includes a Photo URL field.

Case Metrics Questions, Service Analytics Custom Wizard Step 4 of 6

- Note: This page is labeled *Step 4 of 6*, even though it's the first page of questions you see after you select custom create. This is the fourth of six steps for creating Service Analytics with the custom option.
- Question 1, optional: Asks you to indicate the primary field you use in Salesforce to track case duration, if any. If you don't track case duration, Service Analytics uses its own formula to calculate case duration based on the date a case was opened and closed. If the case is still open, it uses today's date as part of the calculation. Allows only a single selection. If you add business hours to the app, Service Analytics includes a business hours case duration calculation. See Use the Service Analytics Wizard Custom Create Option.
- Question 2, optional: Asks if you use other (secondary) fields related to case duration. You can select multiple fields, for example, **Duration with customer** and **Duration with agent**.
- Question 3, optional: Asks you to select the field you use to track SLA compliance. Typically, you would track SLA compliance with
  a custom formula field on the Cases object or the standard Milestone Status field. (Milestone Status field values include compliant,
  open violation, and closed Violation). If you track SLA compliance using a Boolean custom formula field, you can't select that field
  from the wizard. In that case, do the following: Select any field and then manually edit the dataflow to include the Boolean field.
  (See Configure the Dataflow Through the Definition File.) Then, find and replace the field name in Service Analytics dashboard JSON
  (see Analytics Dashboard JSON Reference).
- Question 4, optional: Asks you to select the field you use to record that a case is resolved on first contact. You would typically track first contact resolution using a Boolean custom formula field on the Cases object or the standard Closed when Created (IsClosedOnCreate) field.
- Question 5, optional: Asks if you'd like to include other Cases object metrics in your app. Choose a numeric field.

### **USER PERMISSIONS**

- Manage Analytics
   Templated Apps
- Edit Analytics Dataflows

## Data Drilldown Questions, Service Analytics Custom Wizard Step 5 of 6

Tell Service Analytics how you prefer to drill down into data about cases, including category, type, severity, owner, and reason, and if they're resolved at first contact.



Note: This page is labeled Step 5 of 6, even though it's the second page of questions you see after you select custom create. This is the fifth of six steps for creating Service Analytics with the custom option.

Question 1, required. Asks about the field you use to categorize cases. Choose the name of the field your business uses most to identify and organize cases, such as service product, type or level.

## **USER PERMISSIONS**

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- **Edit Analytics Dataflows**



Note: This is the only question you see if you use basic app creation.

- Question 2, optional. Asks about the field you use to record customers' type of support. Examples include gold, silver, or bronze; and premium and basic.
- Question 3, required. Asks which field you use to categorize case severity—usually the field you use to prioritize cases.
- Question 4, required. Asks which field you use to track case status of case. You filter and analyze cases in dashboards based on your selection.
- Question 5, required. Asks about the field you use to identify topics, reasons, and closure codes of cases. Your selection helps you understand which kinds of cases your team solves for most efficiently.
- Question 6, required. Asks you to choose the field you use to track types of cases so you can filter and analyze cases according to support type.
- Question 7, required. Asks you to select the field used to track channels customers use to open cases, such as phone, email, mobile,
- Question 8, required. Asks you to select the object used to track cases according to geography. Options are **Accounts**, **Contacts**, and **Cases**. Defaults to **Accounts**, which is used in basic create.
- Question 9, required. Asks you to indicate the field in the object selected in Question 8 to track cases by geography. Defaults to **Billing State/Province**, which is used in basic create.
- Question 10, required. Asks you to indicate your fiscal year start month. Defaults to January; select another month if your fiscal year is different from calendar year. Service Analytics supports only standard fiscal periods.
- Question 11, optional: Select dimension fields from the Cases object you haven't selected in previous questions. Adding dimensions lets you drill into dimensions that are important to your organization. Dimensions are qualitative values, such as date, region, and product name.

### Questions About Added Features, Service Analytics Custom Wizard Step 6 of 6

Provide more specifics about how Service Analytics uses data from the features you added to the app.



Note: This page is labeled Step 6 of 6, even though it's the third page of questions you see after you select custom create. This is the last of six steps for creating Service Analytics with the custom option.

Most of the questions on this page appear only if you add CSAT and knowledge features to your app. See Use the Service Analytics Wizard Custom Create Option. Follow the instructions carefully to assure success.

### **USER PERMISSIONS**

- Manage Analytics Templated Apps
- **Edit Analytics Dataflows**

- Question 1, required. You see this question only if you add CSAT to your app. Asks which object you use to track CSAT. Service Analytics defaults to **Cases**. If you use a different object to track CSAT, select it from the pick list and answer the additional questions that appear.
- Question 2, required. You see this question only if you add CSAT to your app. Asks you to select the field from the object selected in Question 1 you use to track CSAT.
  - Question 2a, required. You see this question only if you select an object other than Cases in Question 1. Service Analytics has to create a join between that object and Cases for you to see CSAT data in dashboards. (For an example, see Set Up Service Analytics CSAT Metrics: Example.) Enter the API name the field where you store case identification information. Usually, that's the Id field, in which case you enter Id.

If it's a field other than **Id**, find the API name for the field. Go to **Setup—>Cases—>Fields**. In the top chart showing standard fields, field name column shows the API name. For example **IsSelfServiceClosed** is the API name for the **Closed by Self-Service User** field. The chart further down for custom fields includes an API Name column.

- Question 2b, required. You see this question only if you select an object other than Cases in Question 1. Determine which field
  from the object selected in Question 1 to use for the other side of the join with the Cases object. Use the field that contains case
  identification. Enter the API name for the field here.
- Question 3, required. You see this question only if you added knowledge to your app. Asks about the article type you want to see
  data about in Service Analytics dashboards. Choose only a single article type. To see the names of article types in Service Cloud, go
  to Salesforce Setup and enter knowledge in the Quick Find box.
- Question 4, required. You always see this question in the wizard. Gives you the option of having Analytics check to see if data in your
  org supports the answers you select. We recommend that you select **Yes** and run the check, because app creation fails if your org
  doesn't contain the right data. Analytics displays an error message that tells you what to fix. Make any required changes in Salesforce,
  refresh your browser cache, and come back to the wizard and finish creating your app.

SEE ALSO:

Set Up Service Analytics CSAT Metrics: Example

### Set Up Service Analytics CSAT Metrics: Example

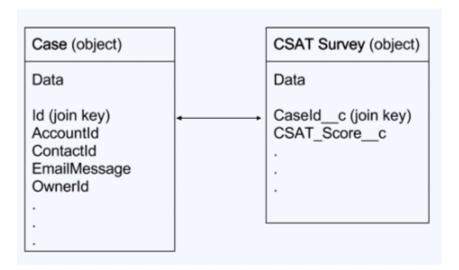
This scenario provides detail to help you answer questions about CSAT data in Step 6 of the Service Analytics configuration wizard.

If you track customer satisfaction (CSAT) data, such as the CSAT score for a service case, in an object other than Cases, take particular care in how you answer the questions on this page.

For example, if you store the CSAT score in a custom object, for example "CSAT Survey", select this object in question 1. In Question 2, specify the field that has the CSAT metric you would like to report, for example "CSAT Score." Service Analytics needs to relate the custom object specified in Question 1 to the Cases object so dashboards can include data about cases, accounts, and agents by CSAT. This relationship is created through a join.

To specify the relationship between the Cases object and your custom CSAT object, designate join keys from both objects and enter their API names in Questions 3 and 4. On the Cases object, this will typically be the "Id" field. On the example custom object "CSAT Survey," this is the custom field that stores the case ID, which in this scenario is the field with the API name CaseId\_c.

The following diagram shows the join between the two objects.



## Share the Service Analytics App

Members of your team can only use the Sales Analytics app if you share it with them.

You need to create an app before you can share it. See Create the Service Analytics App You can only share it with users who have the following permissions enabled:

- Access Service Cloud Analytics Templates and Apps
- Use Analytics Templated Apps
- Access Sales Cloud Analytics Templates and Apps
- 1. Roll your cursor over the icon for the app and click **Share**.
- 2. Type in the names of team members.
- 3. Click Add, and click Save.

## Reconfigure the Service Analytics App

To restore deleted or altered dashboards or change wizard settings, reconfigure an existing version of Service Analytics.

- (1) Important: Important. Reconfiguring your app gets rid of dashboard customizations, including fields or objects added to the dataflow. It also deletes actions you enable, or changes to security settings and dashboard colors and labels. If you've made any customizations, save copies of your dataflow definition file or dashboards. Then copy them into your reconfigured app.
- 1. Open the app landing page. If you see **Upgrade** instead of **Reconfigure**, you need to upgrade to the new version of the app before you can use the reconfigure feature. See **Upgrade** the Service Analytics App.
- 2. Click the Reconfigure app link.

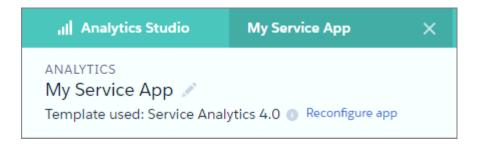
### **USER PERMISSIONS**

To create and manage Analytics apps:

- Manage Analytics
   Templated Apps
- Edit Analytics Dataflows

## **USER PERMISSIONS**

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

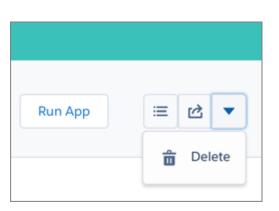


- **3.** Review the next screen carefully. It warns you that reconfiguring overwrites customizations, including changes or additions you've made to your app. If you're comfortable overwriting customizations, check the box and click **Continue**. If not, click **Back** or the **X** in the upper right corner.
- **4.** Complete the app creation process described in Create the Service Analytics App.
- **5.** At the end of the process, you're asked if it's OK to reconfigure your app. This gives you one more chance to make sure you want to overwrite customizations. If you are, click **OK**. Service Analytics creates a new version of your app.

### Delete the Service Analytics App

Delete apps to start app creation all over or to get rid of apps you no longer use.

- Important: If you delete your app, Analytics doesn't retain the wizard answers you selected for that version of the app. You have to start the creation process over. If you wish to reuse settings from the app, keep it until you've recreated the app and then delete it.
- 1. Navigate to Analytics Studio and open the app. Make sure you're viewing the app's landing page and that you can see the app name at upper left, with a list of dashboards in the center panel.
- 2. Click the triangle in the upper left corner and select **Delete**.



### **USER PERMISSIONS**

- Manage Analytics Templated Apps
- Edit Analytics Dataflows

- **3.** In the next screen, Service Analytics asks you to confirm that you want to delete your app. If you are, click the **Delete XX Asset(s)** button.
- **4.** Analytics deletes your app.

## Upgrade the Service Analytics App

Take advantage of the latest Service Analytics features by upgrading your app every time we release a new version.

The banner at the top of your app home page tells you that we've released a new version. It also provides a link to more information about the release. There's also a link inviting you to start the upgrade process in the left-hand column of the home page, just below the app name.

Here's how to upgrade your app.

- 1. Click either the "What's new" link in the banner or the "New version available" link in the left-hand column of your app's home page.
- USER PERMISSIONS

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- Edit Analytics Dataflows
- 2. You can read information about the new version on top of the page that opens. At the bottom of the page, find the buttons: **Upgrade current app** and **Create new app**.
- 3. See descriptions of what the buttons do by hovering over them. If you click **Upgrade current app**, you overwrite your current app and all its assets, replacing it with an app based on the new version. Upgrading also deletes any customizations, including any new fields or object that you've added to the dataflow or changes you've made to security settings and dashboard labels and colors. If you click **Create new app**, you create a second copy of your current app based on the new version. Decide which option suits your circumstances, and click the appropriate button.
- **Warning:** If you've customized your app, click **Create new app** instead of **Upgrade current app** to make an app copy based on the new version. Creating a new app preserves the current version and any customizations, which you can then manually copy into the new version of the app.

If you click **Upgrade current app**, you see a screen warning you that the upgrade option overwrites the current app and gets rid of any customizations you've made. If you're OK with overwriting customizations, check the box and click **Continue**. If you're not, click **Back** to return to the previous screen. Clicking **Continue** takes you to the configuration wizard. Skip ahead to step 6.

- **5.** If you click **Create new app**, you're taken to the configuration wizard. You don't see a warning, since you're not overwriting your current app, which is preserved with any customizations you've made to it.
- **6.** The configuration wizard is preloaded with the settings you chose last time you used the wizard. You can either keep those settings or change them. Go through each page of the wizard.
- 7. Once you complete the wizard, Analytics shows a screen that indicates which assets are impacted by the upgrade. Review the screen to see how many datasets, dashboards, and lenses will be changed, deleted, or added by the upgrade. It also shows how changed assets will be modified—whether the change is to data or appearance. On the same screen, you have the option to download a file with code for changes made to the app. If you've customized the app, download and save the file so you can copy and paste customization code into the upgraded version.
- **8.** Upgrade option only: If you're upgrading your app, click **Upgrade current app**. Remember, this overwrites any customizations you've made. You can also click **Back** to go back into the configuration wizard and change your selections or click the **X** in the upper-right corner to cancel.
- **9.** Create option only: If you're creating a new app, name your app something different from the current version and click **Create new app**. This option saves your current app and all its customizations. You can also click **Back** to go back into the configuration wizard and change your selections or click the **X** in the upper-right corner to cancel.

If the link below the app name says "Reset app," you're using the latest version and don't need to upgrade.

## Schedule the Service Analytics Daily Dataflow

Schedule a daily dataflow at a time outside standard business hours before you start exploring with Service Analytics.

When you create Service Analytics, the creation process includes a dataflow that imports the latest Service Cloud data to Analytics. You can schedule the dataflow to be rerun every day to assure that your app uses up-to-date Salesforce data. Schedule the dataflow to take place sometime outside normal business hours so the dataflow doesn't interrupt your use of the app.

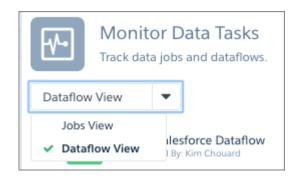


**Note**: The Service Analytics dataflow runs only once when you create the app. Schedule it to run daily so the app uses the latest services data.

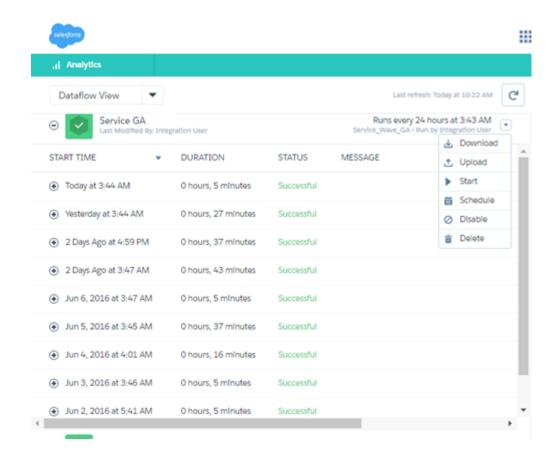
## **USER PERMISSIONS**

To create and manage Analytics apps:

- Manage Analytics Templated Apps
- Edit Analytics Dataflows
- 1. Go to **Analytics** in the Lightning Platform menu (top right of the Salesforce window) if you're not already there. Open the Data Manager by clicking the gear icon at the upper right of the screen.
- 2. Select Dataflow view from the menu at the top left of the Data Manager screen.



**3.** Find the app you created; you may have to scroll down the page. Open the menu on the far right of the screen next to the app icon and name. Select **Schedule**, and set a time for the dataflow. Select a time outside normal work hours so the dataflow doesn't interrupt business activities. Click **Save**.



## Embed Service Analytics Sidebar Dashboards in a Salesforce Page

USER PERMISSIONS

| OSERT ERMISSIOTAS   |   |
|---|---|
| To use Analytics templated apps:                                | Use Analytics Templated Apps                      |
| To use Service Analytics:                                       | Access Service Cloud Analytics Templates and Apps |
| To create and manage Analytics apps:                            | Manage Analytics Templated Apps                   |
|   | Edit Analytics Dataflows                          |
| To edit a dataset's extended metadata (XMD) file:               | Edit Analytics Dataflows                          |
| To create a Visualforce page (for Salesforce Classic pages)     | Customize Application                             |
| To create and save Lightning pages in the Lightning App Builder | Customize Application                             |
| To view Lightning pages in the Lightning App<br>Builder         | View Setup and Configuration                      |
|   |   |

## EDITIONS

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

Add Service Analytics dashboards to Salesforce pages so your service team can get a complete view of their cases and take appropriate action.

Service Analytics includes three specialized dashboards—called sidebars—to give service agents instant access to visualizations of data about their cases.

- The By Customer sidebar gives agents a snapshot of their customers, including products, case reasons and priority, and CSAT.
- The By Similarity sidebar shows data about previous cases so agents can guide customer interactions based on what they did in similar cases.
- The By Case History sidebar provides a quick view of the lifecycle of a case so agents can be informed during customer conversations.

Administrators can embed them in a Salesforce page so agents can access Service Analytics seamlessly while they carry out their normal case work. For example, if your Salesforce makes the Service Cloud available through a service console, that's an ideal place to embed the sidebar dashboards.

To embed a sidebar in Lightning Experience, use Wave Dashboard Components. Read the process in Embed Analytics Dashboards in Lightning Pages, then see Steps 3, 4, and 5 below to create the filter.

To embed a sidebar in Salesforce Classic, follow the steps here.

- 1. Create a Visualforce page for each sidebar. Go to Setup and enter Visualforce Pages in the Quick Find box, then select Visualforce Pages, and click New. Enter a label with the name of the sidebar and, optionally, a description.
- - **a.** Replace Your\_dashboard\_ID with the dashboard ID for the sidebar. You can find the dashboard ID by opening the sidebar in Service Analytics; the ID is the last 15 characters of the URL for the sidebar.

Depending on which sidebar you're embedding, go to one of the following steps:

- **By Customer sidebar:** Go to Step 3.
- **By Similarity sidebar:** Go to Step 4.
- By Case History sidebar: Go to Step 5.
- 3. If you're creating a page for the By Customer sidebar, replace filter="Filter\_condition" with one of the following, then skip to Step 6.
  - a. If you're embedding a sidebar dashboard from the Service Analytics (Classic) app built with the old dashboard designer in a Salesforce Classic page, use this syntax: filter="{'ServiceCase1': {'AccountId': ['{!case.AccountId}']}}".
  - b. If you're using the latest version of Service Analytics based on the new dashboard designer, use this syntax to embed the dashboard in a Salesforce Classic page: filter="{'datasets': {'ServiceCase1': [{'fields':['AccountId'], 'filter': { 'operator':'in', 'values': '{!case.AccountId}'} }]}}".
  - c. If you're embedding a dashboard from the latest version of Service Analytics in a Lightning Experience page, use this syntax: filter="{'datasets': {'ServiceCase1': [{'fields':['AccountId'], 'filter': { 'operator':'in', 'values': ['\$AccountId']} }]}}".

In all cases, replace `ServiceCase1' with the name of the Service Case dataset. To find the name, open a dashboard, hit **Command+e** to view the JSON for the dashboard, and search for ServiceCase. The name of the dataset is appended with a numeral that's incremented each time you create the app, such as `ServiceCase2'. Enter the entire dataset name including the numeral

- **4.** If you're creating a page for the By Similarity sidebar, replace filter="Filter\_condition" with one of the following, then skip to Step 6.
  - a. If you're using Service Analytics (Classic) with previous dashboards built with the old dashboard designer, use this syntax to embed the dashboard in a Salesforce Classic page: filter="{'ServiceCase': {'Reason': ['{!case.Reason}'], 'Product c': ['{!case.Product c}']}}".
  - b. If you use the latest version of Service Analytics based on the new dashboard designer, use this syntax to embed the dashboard in a Salesforce Classic page: filter="{'datasets' : {'ServiceCase1': [ {'fields':['Reason'], 'filter': { 'operator':'in', 'values': '{!case.Reason}'}}, {'fields':['Product\_c'], 'filter': { 'operator':'in', 'values': '{!case.Product c}' }} ]}}".
  - c. If you're embedding a dashboard from the latest version of Service Analytics in a Lightning Experience page, use this syntax: filter="{'datasets': {'ServiceCase1': [{'fields':['Reason'], 'filter': { 'operator':'in', 'values': ['\$Reason']}}, {'fields':['Product\_c'], 'filter': { 'operator':'in', 'values': ['\$Product\_c'] }}]}".

In all cases, do the following.

- Replace 'ServiceCase1' with the name of the Service Case dataset. See Step 3 to learn how to find the name.
- Replace 'Product\_c' with the API name of the custom field you use to track products. This field is the answer you selected in the configuration wizard, Page 2, Question 4. Find the API name of this field by going to Setup and typing Cases in the Quick Find box. Then click Fields and review your custom field names to find the field you use for products. Look for the API name of the field, and use that in place of 'Product c' in both places in the query.
- Note: If you use a custom field to track case reasons, replace 'Reason' with the API name of your custom field. Find the API name using the same technique you use for finding the custom field you use to track products.
- 5. If you're creating a page for the By Case History sidebar, replace filter="Filter\_condition" with one of the following, then skip to Step 6.
  - a. If you're using Service Analytics (Classic) with previous dashboards built with the old dashboard designer, use this syntax to embed the dashboard in a Salesforce Classic page: filter="{'ServiceCasel': {'Id': ['{!case.Id}'], 'OwnerId': ['{!case.OwnerId}'], 'Product\_c': ['{!case.Product\_c}'], 'Reason': ['{!case.Reason}']}}".

Also do the following:

- Replace 'Product\_\_c' with the name of the custom field you use to track product family. See Step 4 to learn how to find the name of that field.
- Replace 'Reason' with the API name of the field you use to track the case reason. This field is the answer you selected in the configuration wizard, Page 2, Question 5. Find the API name of this field by going to Setup and typing Cases in the Quick Find box. Then click Fields and review your custom field names to find the field you use for case reason. Look for the API name of the field, and use that in place of 'Reason' in the guery
- b. If you're using the latest version of Service Analytics based on the new dashboard designer, use this syntax to embed the dashboard in a Salesforce Classic page: filter="{'datasets': {'ServiceCase1': [ {'fields':['Id'], 'filter': { 'operator':'in', 'values': '{!case.Id}'} }]}}".
- c. If you're embedding a dashboard from the latest version of Service Analytics in a Lightning Experience page, use this syntax: filter="{'datasets': {'ServiceCase1': [ {'fields':['Id'], 'filter': { 'operator':'in', 'values': ['\$Id']} }]}}".

In all cases, replace 'ServiceCase1' with the name of the Service Case dataset. See Step 3 to learn how to find the name.

**6.** Save the page, and open it in preview mode to be sure it shows the dashboard.

- 7. Add the page to the console or whatever page you prefer in Salesforce. Through Setup, find the specific page layout you want to include the sidebar. For example, some customers use a page layout for information from the Cases object. In that case, enter Cases in the QuickFind box in Setup, then open Page Layouts under Cases, and look for the page layout you want to edit.
- **8.** Click Edit Layout and select the **Custom Console Components** tab near the top. Go the Right Sidebar section and select one of the pages you just created. First, select Visual Force page from **Type**, then select the page you just created from the **Component** drop-down. Enter a label.
- 9. Set the width to 450px and save the layout. The sidebar should appear embedded in the page you just edited.
- **10.** Repeat this step with the other two sidebars, as needed.

## **Understand Service Analytics App Limitations**

Service Analytics requires that Service Cloud include specific data, initially supports a limited set of Salesforce objects, and has other miscellaneous limitations.

### **Service Analytics Limitations**

The following limitations apply to Service Analytics.

### **Service Analytics Data Requirements**

Service Cloud data must include at least one each of the following for Service Analytics dashboards to function correctly: Events, tasks, closed cases, or published articles attached to a case or an opportunity. It also requires that your org have at least one contact ID associated with a case.

Custom formula fields on the Cases object must exist or be created for the SLA missed (text) and FCR (Boolean) fields.

### **Service Analytics Support for Salesforce Objects and Fields**

Service Analytics supports all Salesforce standard and custom objects and data. When you first create the app by default it includes only a predefined set of objects and fields. The app creates a dataflow that exposes selected fields from the following Salesforce objects:

- Account
- Cases
- Contact
- User
- UserRole
- Task

Service Analytics also uses fields from the following options depending on the answers you select in the configuration wizard:

- Customer satisfaction (CSAT)
- Knowledge
- Business hours
- Case history
- Case record types
- Queues
- Opportunities
- Opportunity record types
- Events
- Telephony

- Live Agent
- Omni-Channel

Service Analytics supports standard and custom fields on standard Salesforce objects. The fields provided are determined by the answers you provide when you create the app using the built-in configuration wizard.

Service Analytics limits custom objects support to no more than 10 custom objects for each org that implements Service Analytics. This limitation is contractual, not technical.

To add custom objects or extra fields not included when you first create the app, you must update the Service Analytics dataflow. For details, see Create Datasets with the Dataflow.

### **More Service Analytics Limitations**

Service Analytics does not support external data sources or registering new datasets from the app-generated dataflow.

Including CSAT score in dashboards/dataflow is optional. The app configuration wizard lets you associate CSAT from a custom case field or Custom Object associated to the Cases object.

You must manually add any security predicates or other dataset filters to the app dataflow.

The app does not support multi-hierarchy (team/manager) when you create it. You must manually add that functionality.

The Knowledge Usage dashboard currently reports on a single Article Type, which you select when you use the configuration wizard.

## **Snapshot Analytics Template**

Create an app using the Snapshot Analytics template to trend data from any existing Einstein Analytics dataset or Salesforce object.

Snapshot Analytics simplifies trending your Salesforce data. The template's wizard lets you snapshot either an existing Analytics dataset or a Salesforce object. If you target a Salesforce object, Analytics imports its data into a dataset. With either option, Analytics automatically creates a dashboard with a snapshot of your data.



**Important:** See Create Apps from Analytics Templates: Start Here for general app creation procedures for all Analytics templated apps. The information here provides specifics about creating and using the Snapshot Analytics app.

## **USER PERMISSIONS**

To create and manage the Snapshot Analytics app:

Manage Analytics
 Templated Apps

To use the Snapshot Analytics app:

 Use Analytics Templated Apps

## **Org Requirements**

Your org requires the following before you can create an app from the Snapshot Analytics template:

- Make sure you and all app users have the Analytics Platform license.
- Set Salesforce field-level security to enable the Analytics Integration User to see all fields used in the app. See Set Field Level Security to Enable Creation of an Analytics Template

## The Snapshot Analytics Configuration Wizard

Snapshot Analytics includes a configuration wizard. Follow these steps to use it.

- 1. Choose existing dataset or Salesforce object page. Choose whether you want to snapshot an existing dataset in Analytics or create a new dataset using a Salesforce object. Click **Looks good, next**.
- 2. Complete one of the following two procedures, depending on your choice.
  - a. Start with an Analytics dataset option. Select the dataset you'd like to snapshot, and click Looks good, next

- b. Start with a Salesforce object option. Lets you choose to create dataset from a Salesforce object parent and up to two levels of child objects (a child and a grandchild). Once you're done, click **Looks good,next**.
  - 1. Choose an object. The page opens to a single guestion asking you to choose the parent object.
  - 2. Choose a child object (optional). After you choose an object, you have the option of selecting a child object. For example, say that you choose Account for the parent object and Contact for the child. Snapshot Analytics adds only accounts related to contacts to the dataset. If you leave this field blank, Snapshot Analytics adds all data from the parent object.
  - **3. Choose a second child object (optional).** You have the option of selecting a secondary child object, which becomes a grandchild of the parent object. For example, say that you choose Account for the parent object, Contact for the first child, and Event for the second child. Snapshot Analytics adds only accounts related to both contacts and events to the dataset. If you leave this field blank, Snapshot Analytics uses only the first child.
- c. Add fields from Salesforce objects to the Snapshot Analytics dataset. If you choose the option to start with a Salesforce object, you can add fields from any of the three selected objects to the dataset created by Snapshot Analytics. Choose as many as you like, then click **Looks good, next**
- 3. Set time to preserve data. To save data storage space, you can set a time to have snapshot data automatically deleted from Analytics. Select Never and Analytics preserves your data until you manually delete it.

### **Use Snapshot Analytics**

You can set the snapshot frequency by rescheduling the Snapshot Analytics dataflow. You can record only one snapshot per day. See Schedule the Dataflow for an Analytics Template.

Edit the new dataset created from a Salesforce object to add actions, measure formatting, and dimension labels to the app. See Edit a Dataset and Add Actions to Analytics Lenses and Dashboards.

## Social Case Analytics Template

The Social Case Analytics template creates an app that provides ready-made insights into team performance on each social channel.

The Social Case Analytics template gives service managers a fast way to get started analyzing Service Cloud social customer service data. The app's ready-made dashboard keeps you on top of how your agents use social channels to deliver customer service. Its visualizations help you:

- Plan capacity with visualizations of historic volume and handle time data.
- Improve productivity and lower cost per case by tracking per-case post volume.
- Identify agents who need coaching by analyzing your team's time-to-close and response times.
- Measure social post volume and trends by language, geography, and handle.
- **Important**: See Create Apps from Analytics Templates: Start Here for general app creation procedures for all Analytics templated apps. The information here provides specifics about creating and using the Social Case Analytics app.

### **Org Requirements**

Your org requires the following before you can create an app from the Social Case Analytics template:

- Make sure you and all app users have the Analytics Platform license.
- Social Case Analytics requires that your org:
  - Includes at least one social post linked to a case.

### **USER PERMISSIONS**

To create and manage the Social Case Analytics app:

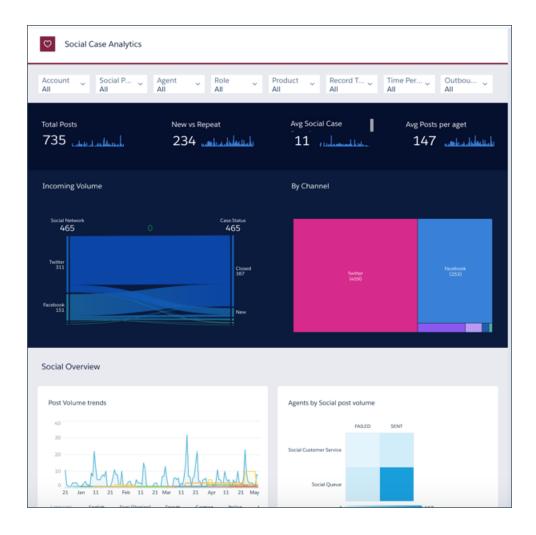
Manage Analytics **Templated Apps** 

To use the Social Case Analytics app:

Use Analytics Templated Apps

- Uses case record types.
- Set Salesforce field-level security to enable the Analytics Integration User to see all fields used in the app. See Set Field Level Security to Enable Creation of an Analytics Template

### **Use Social Case Analytics**



The Social Case Analytics Social Posts dashboard gives you a wealth of data visualizations about your service agents social channel interactions. Summary metrics include the following:

- Total posts to social channels
- Unique social personas
- Average social case duration
- Average first response time
- Average outbound posts per agent
- Incoming volume by day and channel

Filter summary metrics by the following:

Social persona

- Agent
- Role
- Product
- Record Type
- Time period

You can also review post volume trends and each agent's social post volume in separate charts.

The app includes SocialPost and SocialPersona datasets, which you can use to build your own custom explorations.

# Explain, Recommend, and Predict with Einstein Discovery

Einstein Discovery exposes relevant facts and themes in your data without you building sophisticated software and statistical models. It generates unbiased answers, explanations, and recommendations.

Einstein Discovery walks you through what has happened and why, what has changed, what is likely to happen, and what you can do about it. Now anyone can tap into the power of data science and do statistical and predictive analytics.

#### IN THIS SECTION:

#### Set Up Einstein Discovery

Set up your org to use Einstein Discovery by creating and assigning permission sets and enabling Einstein Discovery.

#### Get Started Using Einstein Discovery

Einstein Discovery exposes relevant facts and themes in your data without you building sophisticated software and statistical models. It generates unbiased answers, explanations, and recommendations. Einstein Discovery walks you through what has happened and why, what has changed, what is likely to happen, and what you can do about it. Now anyone can tap into the power of data science and do statistical and predictive analytics.

#### Display Einstein Discovery Recommendations in a Salesforce Object

Use the predictive power of Einstein Discovery to improve your everyday business decisions. With some configuration, Einstein Discovery can predict an outcome or recommend a course of action for a Salesforce object of your choice.

#### Learn Einstein Discovery with Trailhead

Trailhead is the fun and free way to learn Salesforce. Now you can get acquainted with Einstein Discovery through Trailhead.

#### **Einstein Discovery Limits**

Einstein Discovery limits the number of rows and columns per dataset.

#### **Einstein Discovery Considerations**

Einstein Discovery differs from other Salesforce features in some ways.

#### Learn More with Einstein Data Insights (Pilot)

Reports show you data, but what does the data mean? Wonder no more! Introducing Einstein Data Insights: a smarter report. Einstein automatically analyzes report data and summarizes key takeaways, comparisons, and trends with insightful charts and metrics. It's one-click data science!

Analytics Set Up Einstein Discovery

## Set Up Einstein Discovery

Set up your org to use Einstein Discovery by creating and assigning permission sets and enabling Einstein Discovery.

The information here describes how to set up your organization to use Einstein Discovery.

#### IN THIS SECTION:

Learn About Einstein Discovery Permission Set Licenses and User Permissions
 Each Einstein Discovery - Analyst or Einstein Discovery - User license is a single-user license that provides access to Einstein Discovery.

#### 2. Create Permission Sets

Create permission sets made up of Einstein Discovery user permissions.

#### 3. Assign Permission Sets to Users

Assign the appropriate permission sets to users. Although you can assign a permission set to an individual user, for efficiency, you can also assign it to a group of users. You can assign multiple permission sets to a user.

#### 4. Enable Einstein Discovery

Enable Einstein Discovery in your org.

## EDITIONS

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

## Learn About Einstein Discovery Permission Set Licenses and User Permissions

Each Einstein Discovery - Analyst or Einstein Discovery - User license is a single-user license that provides access to Einstein Discovery. The Einstein Discovery - Analyst permission set license makes these user permissions available for provisioning.

| User Permission                               | What It Enables  |
|---|--|
| Connect Einstein Discovery Model              | Connect Einstein Discovery model to a Salesforce object.   |
| Create and Update Einstein Discovery Datasets | Import data into Einstein Discovery and easily create datasets from Salesforce data, CSV files, Oracle, Microsoft SQL Server, Postgres, MySQL, Hadoop, SAP, and Netezza. |
| Create and Update Einstein Discovery Stories  | Create stories to discover relationships between a business relevant metric and the explanatory variables that are potential influencers of that metric.                 |
| Manage Einstein Discovery                     | Access all Einstein Discovery features and see all datasets and stories created by users.  |
| Share Einstein Discovery Stories              | Allow user to export Einstein Discovery stories to Word, PowerPoint, R, and Analytics.   |
| Use Einstein Discovery                        | Use Einstein Discovery and view the datasets and stories that you have permission to view.   |
| View Einstein Discovery Recommendations       | View Einstein Discovery recommendations that are connected to a Salesforce object.   |

The Einstein Discovery - User permission set license makes these user permissions available for provisioning.

Analytics Set Up Einstein Discovery

| User Permission                         | What It Enables  |
|---|--|
| View Einstein Discovery Recommendations | View Einstein Discovery recommendations that are connected to a Salesforce object. |

#### **Create Permission Sets**

Create permission sets made up of Einstein Discovery user permissions.

#### **Create Permission Sets**

This example shows you how to create a *Manage Einstein Discovery* permission set, for users who create and administer Einstein Discovery.



**Note**: To use Einstein Discovery, the View Setup and Configuration permission is required.

- 1. From Setup, enter Permission Sets in the Quick Find box, select Permission Sets and then click New.
- 2. For Label, enter Manage Einstein Discovery. The API name is filled in automatically.
- 3. For License, select Einstein Discovery Analyst PSL.

When you select a specific permission set license, any user assigned to the permission set is *auto-assigned* the permission set license. If you select --None--, you must *manually* assign the permission set license to users before you can add them to the new permission set.

- **4.** Click **Save**. The Permission Set details page shows the new permission set.
- 5. Click **System Permissions** to open the list of user permissions enabled by the Einstein Discovery Analyst PSL license.
- 6. Click Edit.
- **7.** Select **Manage Einstein Discovery**, and then click **Save**. You've successfully created a permission set that enables users to create and administer Einstein Discovery. You can now assign it to users.

You can build other permission sets out of the individual permissions enabled by the Einstein Discovery Analyst license, depending on the needs of users in your organization.

To create a different permission set for other kinds of users, repeat the steps to create a Manage Einstein Discovery permission set, with these exceptions:

- 1. Name the permission set something different.
- 2. Select the appropriate user permissions and click **Save**.

## Assign Permission Sets to Users

Assign the appropriate permission sets to users. Although you can assign a permission set to an individual user, for efficiency, you can also assign it to a group of users. You can assign multiple permission sets to a user.

- 1. From Setup, enter Permission Sets in the Quick Find box, then select Permission Sets.
- 2. Click the permission set you want to assign to users.



3. Click Manage Assignments, and click Add Assignments.

### **USER PERMISSIONS**

To create permission sets:

 Manage Profiles and Permission Sets

click **New**.

## USER PERMISSIONS

To assign a permission set to users:

Assign Permission Sets

- **4.** Select the users, and click **Assign**.
- 5. Click Done.

Repeat these steps for every user in your organization who requires access to Einstein Discovery.

### **Enable Einstein Discovery**

Enable Einstein Discovery in your org.

- From Setup, enter Einstein Discovery in the Quick Find box, then select Getting Started.
- **2.** Use the toggle button to enable Einstein Discovery.

### **USER PERMISSIONS**

To enable Einstein Discovery:

 Manage Einstein Discovery

## Get Started Using Einstein Discovery

Einstein Discovery exposes relevant facts and themes in your data without you building sophisticated software and statistical models. It generates unbiased answers, explanations, and recommendations. Einstein Discovery walks you through what has happened and why, what has changed, what is likely to happen, and what you can do about it. Now anyone can tap into the power of data science and do statistical and predictive analytics.

The analysis centers around uncovering the relationships between a business relevant metric (outcome) and the metric's potential influences (explanatory variables). Einstein Discovery surfaces causes and correlations, points your investigations in the right direction, and suggests answers. It complements you and your team's knowledge of your business. When you combine your human intuition and domain knowledge with Einstein Discovery analytics, you gain amazing predictive insights that might never be found using manual analysis techniques.

#### IN THIS SECTION:

#### 1. Bring Your Data into Einstein Discovery

You can import your data into Einstein Discovery to create datasets in several ways, including from Salesforce data, CSV files, Oracle, Microsoft SQL Server, Postgres, MySQL, Hadoop, SAP, and Netezza.

#### 2. Create a Story to Uncover Relationships

Einstein Discovery quickly sifts through huge amounts of data to find the important correlations and make accurate predictions. Create a story to start uncovering the relationships between a business relevant metric and the explanatory variables that are potential influencers of that metric.

#### 3. Use the Story

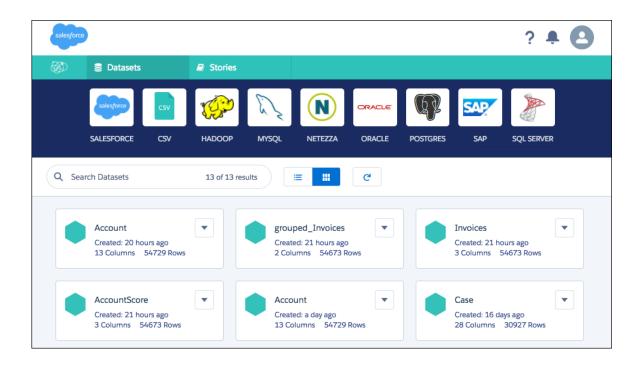
Einstein Discovery surfaces hidden, statistically sound patterns in your data to point your investigations in the right direction. It suggests unbiased answers so that you can focus on the metrics that matter. You learn why something happened and then what to do about it.

## Bring Your Data into Einstein Discovery

You can import your data into Einstein Discovery to create datasets in several ways, including from Salesforce data, CSV files, Oracle, Microsoft SQL Server, Postgres, MySQL, Hadoop, SAP, and Netezza.

Get suggestions on how to improve the quality of your dataset, review the suggested changes, and make data improvements.

You can load one dataset at a time.



#### IN THIS SECTION:

#### Open Einstein Discovery

Use the App Launcher to open Einstein Discovery.

#### Connect to Salesforce to Create a Dataset

You can create Einstein Discovery datasets by importing your data from Salesforce.

#### Upload a CSV File to Create a Dataset

You can create Einstein Discovery datasets by uploading your data from a CSV file.

#### Connect to Other Data Sources to Create a Dataset

You can create a dataset from other data sources such as Oracle, Postgres, Microsoft SQL Server, MySQL, Hadoop, Netezza, and SAP HANA. Your data source must be accessible to the Einstein Discovery server.

#### Use a Dataset Imported from an Einstein Analytics Dataflow

Create Einstein Discovery datasets using an Einstein Analytics dataflow. These dataflows can gather data from Salesforce objects, replicated objects, or existing Einstein Analytics datasets.

#### Review Suggested Changes and Make Data Improvements

Einstein Discovery includes several data transformation and manipulation features. If much data manipulation is required, do that step before you import your data.

#### Edit, Share, or Delete a Dataset

It's easy to edit, share, or delete a dataset in Einstein Discovery.

#### Data Preparation for Predictive Analytics

Data preparation is a critical success factor for achieving optimal results. The data preparation process involves choosing an outcome measure to evaluate and potential influencer variables. You then cleanse the data, create fields, and generate datasets to use for automated analysis. The quality of output relies on high-quality input. Einstein Discovery provides features for loading and lightly cleaning or modifying your data. You can also use third-party tools and utilities to further expedite data cleansing and wrangling tasks.

### **Open Einstein Discovery**

Use the App Launcher to open Einstein Discovery.

In Lightning Experience, click the app launcher ( ), and then click the Einstein Discovery tile. In Salesforce Classic, select **Einstein Discovery** from the app menu at the upper right.



**Note:** Be sure to set your popup blocker to allow popups. Otherwise, your connected app doesn't launch.

If you don't see Einstein Discovery in the menu, ask your administrator to enable Einstein Discovery. For more information, see Set Up Einstein Discovery.

### **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

### **USER PERMISSIONS**

To open Einstein Discovery:

Use Einstein Discovery

#### Connect to Salesforce to Create a Dataset

You can create Einstein Discovery datasets by importing your data from Salesforce.

- 1. On the Datasets tab, click the **Salesforce** tile. Your Salesforce instance must be accessible to the Einstein Discovery server. If IP address restrictions are set for your Salesforce user profile, contact your administrator.
- 2. In the Connect to Salesforce window, provide the following information.
  - **a. Connection Name**—A name for your Salesforce connection.
  - **b. Salesforce Login URL**—The login URL of your Salesforce org.
  - **c. Username**—Your Salesforce username.
  - d. Password (+ Security Token)—A security token is an automatically generated key from Salesforce. For example, if your password is mypassword, and the security token is XXXXXXXXXX, enter mypasswordxxxxxxxxxxx. If you don't know your security token, you can request a new one via the Salesforce user interface. From your personal settings, enter Reset in the Quick Find box, then select Reset My Security Token. Click Reset Security Token. The new security token is sent to the email address in your Salesforce personal settings.

#### 3. Click Connect.

- **4.** On the Objects tab, select a Salesforce object in the Objects list.
- **5.** Select the fields to import.
- **6.** To copy the data to the Einstein Discovery server, click **Copy Data**. When it finishes, the new dataset appears in your list of datasets. The next steps are described in "Review Suggested Changes and Make Data Improvements."

### **EDITIONS**

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### **USER PERMISSIONS**

To create or update a dataset:

 Create and Update Einstein Discovery Datasets

### Upload a CSV File to Create a Dataset

You can create Einstein Discovery datasets by uploading your data from a CSV file.

- 1. On the Datasets tab, click the CSV tile.
- 2. Select the CSV file that you want to upload from your local drive. You can also upload a compressed CSV file. The recommended compression format is 7z, which is the open source file format used by 7-Zip. The normal ZIP compression format is discouraged for larger files. Your data is copied to the server and analysis is conducted on Einstein Discovery's copy of the data. It takes a few moments for the data to be transferred and processed. When finished, you see your dataset. The message, "Data Improvements Detected," means that ways to improve the quality of your dataset have been identified.

The next steps are described in "Review Suggested Changes and Make Data Improvements."

### **EDITIONS**

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Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

### **USER PERMISSIONS**

To create or update a dataset:

 Create and Update Einstein Discovery Datasets

#### Connect to Other Data Sources to Create a Dataset

You can create a dataset from other data sources such as Oracle, Postgres, Microsoft SQL Server, MySQL, Hadoop, Netezza, and SAP HANA. Your data source must be accessible to the Einstein Discovery server.

- 1. On the Datasets tab, click the tile for your datasource.
- 2. In the connection information window, enter the connection name, host, database, port, username, and password. Only alphanumeric characters and the underscore (\_), period (.), and dash (-) are allowed for the username, host, and database fields.
- 3. Click Connect.
- **4.** Select the table to use.
- 5. Choose to either copy the data or link to the remote server. To copy the data to the Einstein Discovery server, click Copy Data. When you link to your database, the data remains on your server and analysis is conducted on the latest version of the data. To create a link, click Direct Link.

When finished, the new dataset appears in your list of datasets. The message, "Data Improvements Detected," means that ways to improve the quality of your dataset have been identified.

The next steps are described in "Review Suggested Changes and Make Data Improvements."

### **EDITIONS**

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### **USER PERMISSIONS**

To create or update a dataset:

 Create and Update Einstein Discovery Datasets

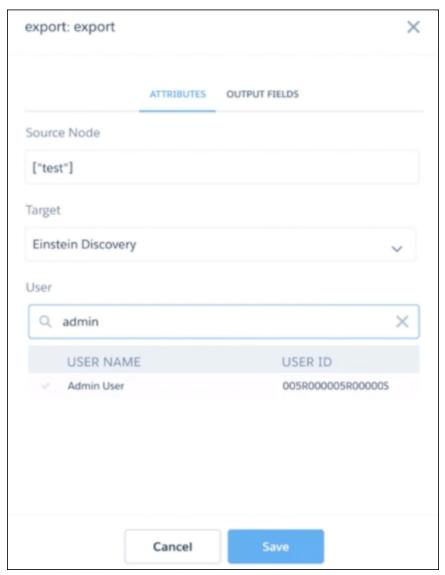
## Use a Dataset Imported from an Einstein Analytics Dataflow

Create Einstein Discovery datasets using an Einstein Analytics dataflow. These dataflows can gather data from Salesforce objects, replicated objects, or existing Einstein Analytics datasets.

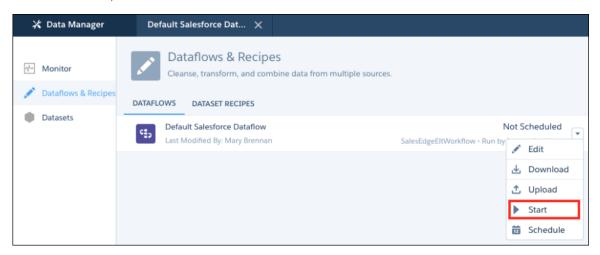
Use an Einstein Analytics Dataflow to Export a Dataset to Einstein Discovery

Let's look at how you can use the editor to configure the dataflow.

- 1. Open Analytics Studio. For more information, see Open Analytics.
- **2.** To open the data manager, click the gear icon ( open the data manager.
- 3. Click Dataflows & Recipes.
- **4.** On the **Dataflows** tab, click the dataflow that produces the dataset that you want to export. The dataflow opens in the dataflow editor. For more information, see Configure the Dataflow with the Dataflow Editor.
- To add an export transformation, click the export button (
- **6.** In the export window, enter the node attributes.
  - **a.** In the **Source Node** field, type the name of the node in the dataflow that identifies the dataset that you want to export.
  - **b.** In the **Target** field, select Einstein Discovery as the destination for the exported data.
  - **c.** In the **User** field, specify a user. This determines who will be the owner of the dataset in Einstein Discovery. Search for the user by name and then select the user ID in the search results. The User ID is placed into the **User** field.



- 7. Click **Save**. The new node appears on the canvas.
- **8.** Click **Update Dataflow** to update the definition file with your changes. Updating a dataflow overwrites the existing dataflow. Analytics validates your dataflow to ensure that you provided all the required attribute values.
- 9. Click the Data Manager tab.
- 10. Click Dataflows & Recipes.
- 11. To start the dataflow, click the down arrow beside the dataflow and select **Start**.



**12.** Click the **Monitor** tab to view the progress of your dataflow. For more information, see Manage Dataset Recipes.

When the status of the dataflow is successful, the exported dataset will be visible in Einstein Discovery for the user you specified in the User field of the export transformation node of your dataflow. Each time the dataflow runs, a new copy of the dataset is put onto the Einstein Discovery datasets page.

### **Use a Dataset Imported from Einstein Analytics**

Let's look at how you can use a dataset that was imported from Einstein Analytics.

- 1. Open Einstein Discovery.
- 2. Click the Datasets tab.
- 3. In your list of datasets, click the dataset that was imported from Einstein Analytics. Datasets that are imported from an Einstein



Analytics dataflow are shown with a bar chart logo in inside the icon.

- Note: You will only see the exported dataset if you are logged in as the user that is specified in the User field of the export transformation node of the dataflow
- **4.** To give other users access to the dataset, share it with them.

### Review Suggested Changes and Make Data Improvements

Einstein Discovery includes several data transformation and manipulation features. If much data manipulation is required, do that step before you import your data.

- 1. To see how Einstein Discovery can improve your data, click **Review Changes**. The number of columns and rows in the dataset are shown so you can verify that they're correct.
- 2. Review the dataset improvement suggestions. For example, you're notified if you have a value in a column that rarely occurs, because statistical tests can't be performed on small samples. If you select the action **Do Nothing**, these entries are bucketed into a category called "Other." Or you can choose to delete the row. If the value is spelled incorrectly and you want to fix it, select **Find And Replace**.
- **3.** If a numeric column contains a non-numeric entry, you can replace the entry, delete it, change the column to a text column, delete the rows, or delete the entire column.
- **4.** To view the first few rows of data in the original dataset, click **Original Dataset**.
- **5.** To view the data after making dataset improvements, click **Improved Dataset**.
- **6.** To save your changes, click **Apply**.
- 7. On the screen that appears, you can perform various data preparation tasks. When you make a change, the Create button turns into the Apply button. After you make a change, click **Apply**.
- **8.** Set each field type to Text, Number, or Date. Einstein Discovery makes a best guess based on the values in each column of your dataset, but it's important to check that they make sense. Set categorical fields that you want to group by to Text. Your measures must be set to Numbers.
- 9. To rename a field, click the field name.
- 10. To delete a field, click the trash icon.
- **11.** To view the minimum and maximum values in the imported data, click the gear icon beside a number or date field. You reduce a numeric or date field to a tighter minimum and maximum by clicking the value and editing it.
- 12. To rename categories or view the number of rows in a category, click the gear icon beside a text field. Deselecting the checkbox next to a category removes those rows from your dataset. To select every category, click **Add All Values**. To not include any category, click **Remove All Values**. You can also convert null values to zero or only include numbers. To rename a category, click the category name. You can also combine categories by giving them the same name.
- **13.** To use a mathematical formula to create a column, click **Add Derived Column**. You can create columns based on the existing columns in your data or an absolute number that you specify. For example, you can calculate the ratio of two columns or take a column that contains the temperature in Celsius and create one that contains the temperature in Fahrenheit.
- **14.** To add data from another dataset, click **Add Column from Lookup Table**. Specify the other dataset and the matching criteria (key). Select the field that you want to include from the second dataset. In the New Name field, you can enter a different label for the field. To add another field, click **Add Field**. When done, click **Submit**.
- 15. To create a grouped table, click **Create Grouped Table**. A grouped table combines (tabulates) multiple rows in the dataset into a single row. For example, a table lists individual purchases by a customer, but you want to know the total amount that the customer spent for the year. So you group the purchases by customer and purchase year before analyzing the data. The data is summarized and tabulated by the variable that you chose to group by. You can also specify how each numeric column in your dataset is tabulated based on the primary Group By variable. Pick a numeric field and select Average, Sum, Min, or Max (or for a Text field, select **First** to use the value of the first row). For example, if you select **Average**, it calculates the average of this variable for each distinct value of the Group By. If you select **Sum**, it calculates the sum of the variable for each distinct value. If you select **First**, it chooses the value for this column for the first row that matched the group by criterion. If you group individual purchases by each customer, and the original table is ordered by date of purchase, First on the Product Name column returns the first purchase made by the customer in that time period.

### **EDITIONS**

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### **USER PERMISSIONS**

To create or update a dataset:

 Create and Update Einstein Discovery Datasets **16.** When you have finished making your changes, click **Apply** and then click **Create**.

### Edit, Share, or Delete a Dataset

It's easy to edit, share, or delete a dataset in Einstein Discovery.

1. On the Datasets tab, click the down arrow in the corner of the dataset tile.



2. Click Edit Dataset, Share Dataset, or Delete Dataset.

### **EDITIONS**

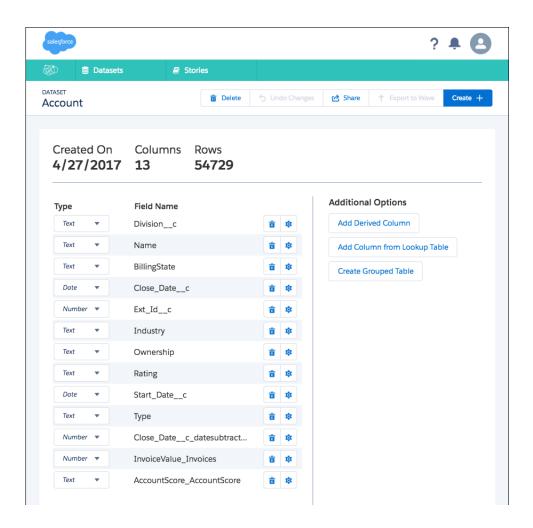
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#### **Data Preparation for Predictive Analytics**

Data preparation is a critical success factor for achieving optimal results. The data preparation process involves choosing an outcome measure to evaluate and potential influencer variables. You then cleanse the data, create fields, and generate datasets to use for automated analysis. The quality of output relies on high-quality input. Einstein Discovery provides features for loading and lightly cleaning or modifying your data. You can also use third-party tools and utilities to further expedite data cleansing and wrangling tasks.

To get started with Einstein Discovery, select a few columns of data, including one outcome measure (for example, revenue, units, or days). Also select several predictor, independent variables (for example, product category, region, date of sale, customer type) to find what insights are immediately identified. Then you can continue to experiment with more columns of data or by organizing your dataset in a machine-learning-friendly format.

Note: It's best to start with just a few columns and then add more data using the following techniques to optimize results.

Depending on your project, data preparation can be a one-time activity or a periodic one. Predictive analytics is an iterative process that can continue after your solution has been deployed. As new insights are revealed, it is common to experiment by adding or changing aspects of the input data. You can schedule analysis to continually add new data to your model incrementally. It is also common to periodically update your model variables and fields with new information or more focused business questions.

Einstein Discovery requires data to be input as a table, view, or comma-separated (.csv) flat file of rows and columns. If you have data stored in a dimensional data warehouse or transactional database format, use record identifiers or primary keys to join fields from multiple tables to create a single, unified, flattened view. Your view contains an outcome metric, along with input predictor variables collected at a level of analytical granularity that you can make actionable decisions on.

For many outcome metrics, data is captured at various business process steps in multiple data sources. A sales process can have data in a CRM, email marketing program, Excel spreadsheet, and accounting system. If that is the case, identify the fields in those systems that can relate or join the different data sources together.

If you want to capture changes in data over a time period, check if your data source is keeping only the current state values of a record. Most data warehouses are designed to save different values of a record over time and do not overwrite historical data values with current data values. Transactional application data sources, Salesforce for instance, contain only the current state value for a record. Getting a prior value requires storing a snapshot of the historical data or keeping the prior value data in custom fields on the current record.

After identifying outcome metric business process data sources and fields, select any fields (predictor variables) that directly affect the outcome. Ensure that the variable data is clean and consistent. The order and meaning of input predictor variables must remain the same from record to record. Inconsistent data formats, "dirty data," and outliers can undermine the quality of analytical findings.

Then you shape the data into analytical fields with derived variables that describe or influence the outcome metric. Shaping data involves subject-matter expertise to creatively select, create, and transform variables for maximum influence.

#### Select an Outcome Metric

The first thing you decide is which metric you want to better understand and at what granularity. A metric could be a revenue, discount or cost measure, duration, or any business process number. You can also use categories with two values as a numeric outcome, such as Win (100)/Loss (0). Two-value outcomes are less accurate than continuous value outcomes. Occasionally, a new metric is created, such as customer revenue by month. It's possible to create outcome variable metrics.

Einstein Discovery algorithms assume that each record is independent and are not related to other records. If relationships exist between records, create a variable within the row of data to capture that behavior. For instance, if the same Opportunity has multiple competitors, don't prepare multiple rows of data with the same Opportunity ID. Instead, create more fields on one Opportunity ID and indicate whether each of the top-10 competitors were present in the deal.

#### **Select Predictor Variables**

Think about which variables can relate, describe, or influence the numeric outcome. In our sales example, potential influencer variables include Discount, Days between Lead Received and Last Contacted, Lead Source, Region, Vertical, Competitor, and Promotion. When selecting predictor variables, you want to gather a maximum amount of information from a minimum number of variables. Einstein Discovery helps this process by eliminating variables that do not have good explanatory power from the story it generates.

Dates are usually rolled up to a duration when used as input in Einstein Discovery. If a business process has multiple key dates, create multiple variables in the Einstein Discovery prepared input view to store numeric durations (for example, Days between Lead to Last Contact and Days between Demo to Trial). Common date variable rollups include the earliest date and the most recent date. Time durations can also be represented in either absolute or relative form.



**Note**: For proof-of-concept projects, keep your input data between 10 and 25 variables. It's faster to learn and improve your data preparation skills with a less complex model.

Einstein Discovery figures out which variables and combinations of variables best explain the behavior of your chosen metric without overfitting or underfitting your analysis.

Overfitting is a common beginner predictive modeling mistake that happens when too many variable fields are used in a predictive model. Overfitting captures the noise in your data with an overly complex, unreliable predictive model. Essentially what happens is that the model memorizes unnecessary details. When new data comes in, the model fails. To avoid overfitting, exclude variables that are too detailed

Underfitting is often the result of an excessively simple model, and the statistical algorithm cannot capture the underlying patterns in the data. Thus there is a delicate balance between being too specific with too many variables and too vague with not enough selected variables.

### Determine the Appropriate Level of Granularity

Determine the appropriate level of granularity for the business insights of interest. What level of insights are of interest to achieve the objective? For example, customer-level insights are of interest when looking at customer revenue. You can adjust the granularity of the data with grouping.

Choose a granularity that is actionable, understandable, and useful so that you can incorporate the results into your business process or application.

A common mistake is to overly aggregate data. Keep the desired outcome in mind, and use data collected in rows at that level of granularity. Data analyzed in Excel might be at a different level than you want for Einstein Discovery. For example, to understand the effects of day of the week, provide data at the day level. You cannot predict a day-level outcome from an aggregated, monthly level dataset.

Statistical analysis datasets can summarize a lifetime of values in just one single row with many columns that describe different points in time. Don't collect a lifetime of fields if a window of time, the "right horizon," more accurately predicts the outcome metric. Usually events closest to the outcome are stronger predictors than events that happened a long time ago.

To use Einstein Discovery for predictions, your variables must be at the point in time that the prediction is based on. For example, let's say that your objective is to decrease defaults on loans by not pre-approving loans that are likely to default. In this case, you capture variables, such as a credit score at the time of loan application and prior. If the person was late on two payments after loan origination, it would not be used in the pre-approval analysis because they have already been approved.

### Cleanse and Prepare Data

Einstein Discovery conducts or recommends several of the steps required to clean and prepare your data. It also looks at combinations of variables to detect complex predictors. However, experts can further improve the quality of the analysis by carefully preparing the data. Assess the condition of your source data. As you collect the data into variables, profile the values. Look for extremes, outliers, missing values, incorrect values, skew, and high cardinality. Common data preparation issues are identified during the data-loading process. You can repair them in Einstein Discovery or in your data preparation process.

We recommend that you address data quality issues as early as possible. If you are seeing errors from source applications, a best practice is to resolve the issue at the source system instead of during data preparation. Here are a few approaches for handling common data issues for predictive data preparation.

#### **Extreme Values and Outliers**

Einstein Discovery algorithms are sensitive to outliers because those values affect averages (means) and standard deviations in statistical significance calculations. If you find unusual values or outliers, confirm whether these data points are relevant and real. Often unusual values are errors. If the extreme data points are accurate, predictable, and reoccurring, do not remove them unless those points are unimportant. You can reduce outlier influence by using transformations or converting the numeric variable to a categorical value with binning.

#### **Missing Values**

The most common repair for missing values is imputing a likely or expected value using a mean or computed value from a distribution. If you use a mean value, you could reduce your standard deviation. Thus, the distribution imputation approach is more reliable. Another approach is to remove records with missing values. Don't get too ambitious with filtering out missing values. Sometimes the pattern is in the missing data. Also, if you delete too many records, you undermine the real-world aspects in your analysis.

#### **Incorrect Values**

Predictive algorithms assume that the input information is correct. If only a few rows have incorrect values, decide whether to remove those rows from the analysis or replace the incorrect values with more correct or average values. If there are numerous inaccurate values, determine why the inaccuracies happened and whether it's possible to repair them. Sometimes it's better to remove a highly error-prone variable than include it in the analysis.

#### Skew

For continuous variables, review the distributions, central tendency, and spread of the variable. These variables are measured using various statistical visualization methods. Confirm that continuous variables are normally distributed. If not, try to reduce skewness for optimal prediction. For categorical variables, use a frequency table, along with a bar chart, to understand distributions of each category. If variable values are skewed, Einstein Discovery could produce biased models. When a skewed distribution must be corrected, the variable is typically transformed by a function, such as the Box-Cox transformation. After applying the fix, a normal distribution for the variable is achieved. The newly prepared, transformed variable performs much better for predictive modeling purposes.

#### **High-Cardinality Fields**

High-cardinality fields are categorical attributes that contain many distinct values. Examples include names, ZIP codes, or account numbers. Although these variables can be highly informative, high-cardinality attributes are rarely used in predictive modeling. The main reason is that including these attributes vastly increases the dimensionality of the dataset, making it difficult or even impossible for most algorithms to build accurate prediction models.

#### **Ordinal Variables**

Ordinal variables are problematic for predictive models. Ordinal data consists of numerical scores on an arbitrary scale that is designed to show ranking in a set of data points. For example, Low, Medium, and High are ordinal. Predictive algorithms assume that the variable is an interval or ratio variable and therefore be misled or confused by the scale. Ordinal variables are usually treated as categorical. If you have ordinal values, transform them into continuous or categorical values.

#### **Duplicate, Redundant, or Highly Correlated Variables**

Minimize duplicate, redundant, or other highly correlated variables that carry the same information. Einstein Discovery algorithms perform better without these kinds of collinear variables. Collinearity occurs when two or more predictor variables are highly correlated, meaning that one can be linearly predicted from the others with a substantial degree of accuracy. To avoid collinearity, do not include multiple variables that are highly correlated or data that is from the same reporting hierarchy. For example, customers who live in the city of Tampa also live in the state of Florida. To identify high correlation between two continuous variables, review scatter plots. The pattern of a scatter plot indicates the relationship between variables. The relationship can be linear or nonlinear. To find the strength of the relationship, compute correlation. Correlation varies between -1 and +1.

#### Create Fields

There is an art to extracting more information from existing data by creating fields and making the data you already have more useful. Fields that precisely describe the process being predicted can improve pattern detection and enable more actionable insights to be found. Creating fields from several combined variables and ratios usually provides more improvement and model accuracy than any single-variable transformation because of the information gain associated with these interactions.

#### Aggregations

Some commonly computed aggregated fields are the mean (average), most recent, minimum, maximum, sum, multiplying two variables together, and ratios made by dividing one variable by another.

#### **Ratios**

Ratios can be excellent fields. A ratio can communicate more complex concepts, such as a price-to-earnings ratio where neither price nor earnings alone can deliver this insight.

#### **Transformations**

Transformation refers to the replacement of a variable by a function. For instance, replacing a variable by its square or cube root or logarithm is a transformation. You transform variables when you want to change the scale of a variable or standardize the values of a variable for better understanding. Variable transformation can also be done using categories or bins to create variables, for example, binning continuous Lead Age into Lead Age Groups or Price into Price Categories, such as Discount, Retail, and OEM.

#### **Generate Datasets**

The most common strategy is to split data into training, testing, and validation datasets. These datasets are usually created through a random selection of records without replacement, meaning each record belongs to only one. All three datasets must contain at least 10,000 rows of data and reflect your real-world scenario.

#### **How Much Data to Get**

You must provide Einstein Discovery with at least 10,000 records that resemble real-world distributions of variables to build reliable predictive models. The actual number of records is not always easy to determine and depends on patterns found in your data. If you have more noise in your data, you need more data to overcome it. Noise in this context means unobserved relationships in the data that are not captured by the input predictor variables. In general, more rows of data are better for analysis accuracy. Columns with more possible values result in finer segmentation of the data, but can require more rows of data for a statistically sound analysis. For example, 10,000 rows with a binary outcome of gender (either male or female) results in potentially 5,000 observations per gender. But 10,000 rows with a variable indicating 50 states results in potentially 200 observations per state.

#### **Cross-Validation**

Einstein Discovery has an optional k-fold cross-validation feature that divides the data into k subsets with the holdout repeated k times. One of the k subsets is used as the test set, and the other k-1 subsets are put together to form a training set. K-fold cross-validation enables you to independently choose how much data to use in testing.



**Note**: Einstein Discovery uses industry-standard, k-fold cross-validation for predictive model evaluation when it is selected during story development.

#### **Time Series Consideration with Datasets**

Data that changes over time must be reflected in your model and also in your input dataset. When time sequences (Lead Received > Quote Provided > Deal Closed) are important in predictions, proportionally collect data from those different time periods. The key principle is to provide data that reflects what actually happens in the real world at the right level of outcome metric granularity.

#### **Thinking Proportionally**

When collecting data, think about the balance of your variables in your raw data. For example, how many vertical industry records are there by time period? When extracting a subset of data, include approximately the same proportion of variables in your input dataset. If you provide more records of one variable, vertical in our example, you can unintentionally introduce bias into your analysis. If you have datasets with millions of rows, it is unlikely to encounter accidental bias.

## Create a Story to Uncover Relationships

Einstein Discovery quickly sifts through huge amounts of data to find the important correlations and make accurate predictions. Create a story to start uncovering the relationships between a business relevant metric and the explanatory variables that are potential influencers of that metric.

- 1. On the Datasets tab, click the down arrow in the corner of the dataset tile.
- Click Create Story from Dataset. If you have unresolved improvements for your dataset, the Create Story from Dataset option is not available. In that case, click Review Changes to prepare the dataset.
- **3.** On the Story Setup page, you see "Maximize the variable < variable > in < dataset >."

## **EDITIONS**

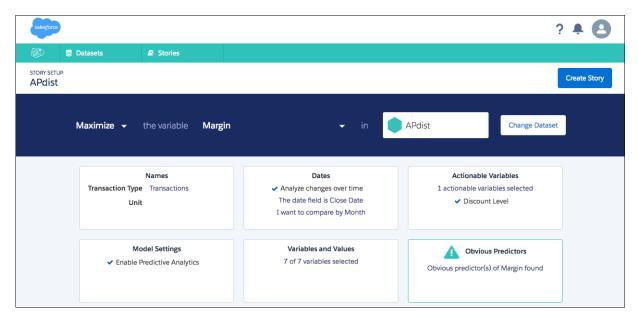
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## USER PERMISSIONS

To create a story:

 Create and Update Einstein Discovery Stories



- **4.** Click the down arrow next to the variable, and scroll through the available measures. Select the one you want to understand. This variable is the outcome variable.
- **5.** Click the down arrow next to Maximize, and select **Maximize** if you want the outcome variable to increase. Select **Minimize** if you to decrease it. The other options on the story setup page are optional and described in more detail later.
- 6. To rename the story, click the title. The default story title is the name of the dataset that you are analyzing.
- 7. Click **Create Story**. Einstein Discovery analyzes hundreds, thousands, or millions of variable combinations to find hidden, statistically significant insights in your dataset. Each user can create one story at a time.

#### IN THIS SECTION:

#### Optional Settings on the Story Setup Page

You can modify the story by selecting different measure variables to analyze and configure the model.

#### Optional Settings on the Story Setup Page

You can modify the story by selecting different measure variables to analyze and configure the model.

- **Names**—To improve the readability of the narrative text that is generated for your story, change the default names of the units and transaction types.
- **Dates**—If your data contains a date column, the Dates tile is visible. Use this setting to analyze changes over time—daily, monthly, quarterly, or yearly—and identify trends within the data.
- Actionable Variables—Specify which variables you can manipulate (actionable variables). The variable you selected in your question is unavailable because it's already being used as the outcome variable. Einstein Discovery finds which value within the actionable variable leads to the greatest positive impact and prescribes which actions to take. Not all variables are actionable. For example, in a retail context, sometimes you can't change the region sold to because the region is assigned, so you can't change it to obtain better performance. If you know that you want to see prescriptions in the "How Can I Improve It" insights of your story, select actionable variables. This setting increases processing time, so instead of selecting actionable variables consider running the analysis later from within the story.
- Model Settings—These settings let you specify which types of analysis to run. You can select more than one option.
  - **Enable Predictive Analytics**—Runs the predictive model for the dataset. If you don't select this option, only the "What Happened" and "What Changed Over Time" insights are generated.

- Use Logistic Regression—Creates a piecewise linear model and leverages a logistic model that is appropriate for boolean
  outcomes. The results are shown in the "What Will Happen" part of the story in which terms are expressed in Log Odds rather
  than Linear Coefficients. The piecewise linear model includes ridge regression to avoid overfitting. It is not a bound model, so it
  produces values greater than 1 and less than 0 in a boolean scenario.
- Perform K-Fold Validation—K-fold validation randomly divides the data into k equal size subsets. The model is trained k times based on (k-1) portions of the data and is then tested on the remaining one portion of data. By default, Einstein Discovery divides the data into four subsets. You can see the model validation results in the R code after the story is created.
- Variables and Values—These settings let you modify the fields used for this story. The changes don't affect the saved dataset. To
  exclude a field from the story, click the trash icon. To modify a field's settings, click the gear icon. The available settings are different
  for each data type.
  - Date fields—The date range and time period to analyze.
  - Text fields—The sort order for insights. You can rename the categories, and you can combine categories by giving them the same name. If Combine unchecked values into the Other column is selected, deselecting categories includes the rows they contain in the Other category. Otherwise, deselecting a category removes its rows from your analysis, but doesn't remove them from the underlying dataset.
  - Number fields—Specify whether each category has the same transaction count or numeric width. Click the minimum and maximum values to reduce the field to a tighter minimum and maximum.

## Use the Story

Einstein Discovery surfaces hidden, statistically sound patterns in your data to point your investigations in the right direction. It suggests unbiased answers so that you can focus on the metrics that matter. You learn why something happened and then what to do about it. Based on historical behavior, you see what the future might hold and what the effective options are for dealing with a situation.

#### IN THIS SECTION:

#### Play the Executive Summary of the Story

The executive summary walks you through the key insights as a human analyst would.

#### Story Insights

The initial story is a series of charts that present the insights in the order of influence on the outcome variable that you specified on the Story Setup page.

#### What Happened Insights

The first insights presented are about what happened. These descriptive insights are the primary insights in your story.

#### What Changed Over Time Insights

What Changed Over Time insights are descriptive. Not only do they tell you what changed over time, but they also show you the trend in the data across different time periods.

#### Why It Happened Insights

Why It Happened insights are diagnostic. There might be several unrelated factors that contribute to a visual pattern you can see in an insight.

#### What Could Happen Insights

What Could Happen insights are predictive.

#### How Can I Improve It Insights

You can explore which values of variables maximize or minimize your desired outcome. Einstein Discovery recommends specific actions, quantifies the expected impact, and explains the reasoning behind the recommendations.

#### Interact with Insights

Interact with the insights to explore the story.

#### Examine the Story Timeline

Learn which factors drive changes over time.

#### Explore and Add More Insights to Your Story

Einstein Discovery presents the insights with the highest statistical importance and highlights the areas to focus on. You can further explore the data by changing the filters. As you explore, you can add insights to your story.

#### Improve the Story

Make your story even better with suggestions from Einstein Discovery.

#### Refresh the Story

You can refresh a story with updated data and rerun the analysis.

#### Modify the Story Settings

After the initial analysis, you can change the story settings and rerun the analysis. Stay on top of changes and iterate the analysis.

#### View Story Details

You can display a summary of the story details.

#### Share or Export the Story

Getting insights is only half the adventure; the other half is acting on them. To involve others, share the story or export it to Analytics. You can also export customizable reports as Microsoft Word documents or PowerPoint slides. All reports include speaker notes written in plain language, so you can stop spending hours building and curating your reports.

### Play the Executive Summary of the Story

The executive summary walks you through the key insights as a human analyst would.

#### 1. Click Play Summary.

The bottom of the page has buttons to mute the narration, restart from the beginning, pause the summary, skip to the next section, or jump to the end of the summary.

- 2. Turn **Discovery Mode** on or off by clicking the toggle switch in the bottom-right corner. Discovery Mode lets you pause the executive summary and investigate an insight in more depth. For example, you see an interesting insight about a region, and you want to compare it to a different region. Turn on Discovery Mode and add the other region. The insights are sorted in order of importance, so the first few tiles in each section are the most insightful.
- **3.** To personalize the story before you read it, click **Personalize Story** in the bottom-left corner. To make adjustments, click the thumbs-up and thumbs-down buttons to contribute your domain knowledge and preferences to the model. When the animated briefing is done, the story is adjusted based on the personalization feedback.

### **EDITIONS**

Available in Salesforce Classic and Lightning Experience.

Available for an extra cost in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

## **USER PERMISSIONS**

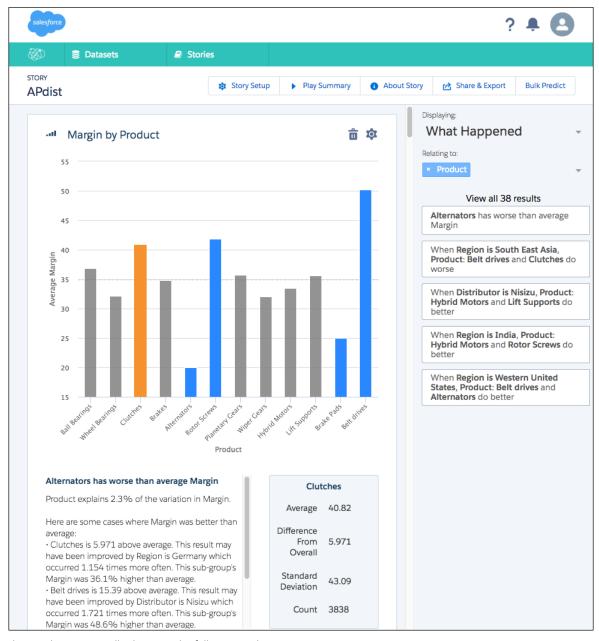
#### To use a story:

Use Einstein Discovery



### Story Insights

The initial story is a series of charts that present the insights in the order of influence on the outcome variable that you specified on the Story Setup page.

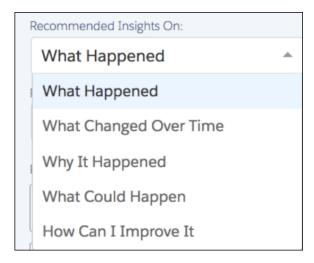


The insights are typically shown in the following order.

- 1. Single variable that best explains the variability in the outcome (best single predictor).
- 2. Variable that with the previous variable most improves the explanatory power (best two-variable predictor).
- **3.** If appropriate, another variable that with the first variable improves the explanatory power.
- **4.** Next single variable that best explains the variability on its own (second-best single predictor).

The story contains different types of insights.

In the margin on the right side, the Recommended Insights On menu is like a table of contents where you specify which types of insights in your story you want to view.

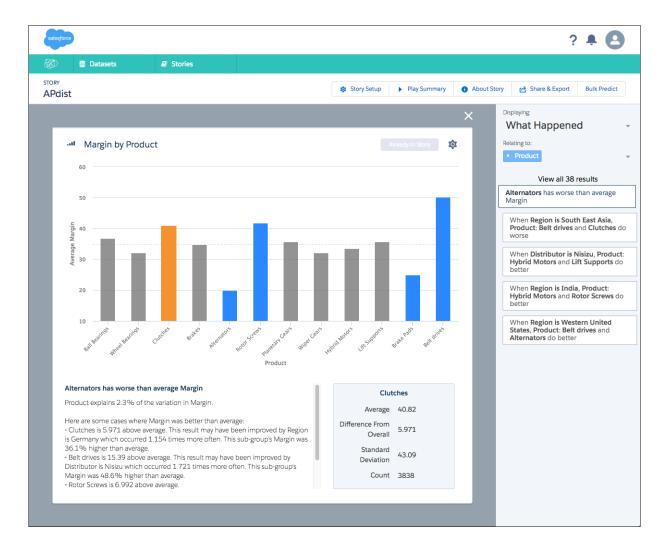


### What Happened Insights

The first insights presented are about what happened. These descriptive insights are the primary insights in your story.

These insights are similar to what you see in BI, visualization, and reporting products, but in addition, Einstein Discovery does the following:

- Looks at all possible insights, and selects the ones with the highest statistical importance
- Conducts statistical soundness tests
- Highlights specific parts of each insight to focus on
- Provides explanations about how what the bars show could be deceptive
- Orders the insights by how interesting they are
- Displays the simplest bar chart that shows the relevant effect
- 1. In the **Recommended Insights On** menu on the right, click **What Happened**.
- 2. When the calculations are complete, you see the most relevant insights. The View All Results section contains additional recommended insights that are related to the insight you are currently looking at.
- 3. To view an insight and optionally add it to your story, click a result. The recommendations are sorted in order of importance.
- Note: The recommendations are a core part of the story. Explore the right panel, and add insights that you find interesting. By interacting with the story, you overlay your intuition and domain knowledge and make the story more insightful. Think of the automated analysis as a mapping system that figured out the lay of the land, which paths connect and where the traps are. But you still have many possible choices of paths to take. Your choices are a necessary part of creating your story.



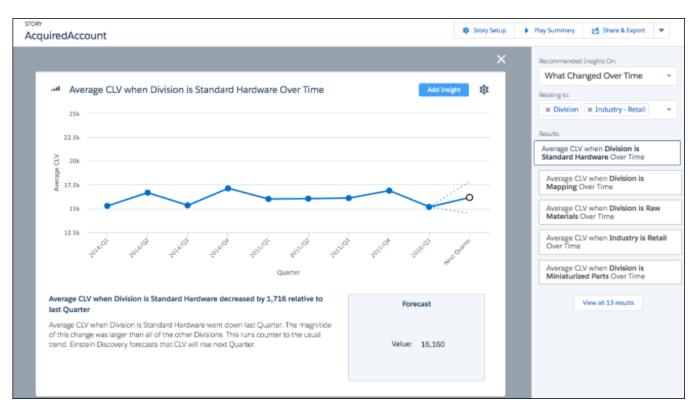
### What Changed Over Time Insights

What Changed Over Time insights are descriptive. Not only do they tell you what changed over time, but they also show you the trend in the data across different time periods.

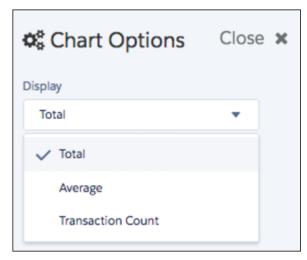
Several unrelated factors can contribute to an insight's visual pattern. For each insight, Einstein Discovery also checks whether other factors are contributing to the pattern.

As with the other insights, the ones with the most variation surface first: The most interesting insights are usually near the top. These are ordered by the categories that experienced the greatest change between the previous period and the most recent period.

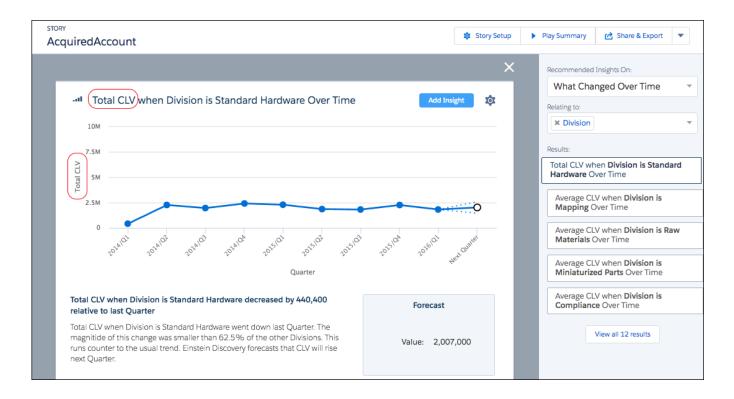
- 1. In the Recommended Insights On menu on the right, click What Changed Over Time.
- 2. To view an insight and optionally add it to your story, click a result. A time series graph that shows average of the outcome variable over time appears. On the right-hand side of the graph is a forecast for the next time period—in this example, next quarter.



Optionally, if the graph shows a revenue metric, you might want to see the total value instead of the average. Click the gear icon in the top-right corner of the insight. In the Chart Options panel, click **Total**.



The y-axis of the chart is changed from Average to Total. Close the Chart Options panel.



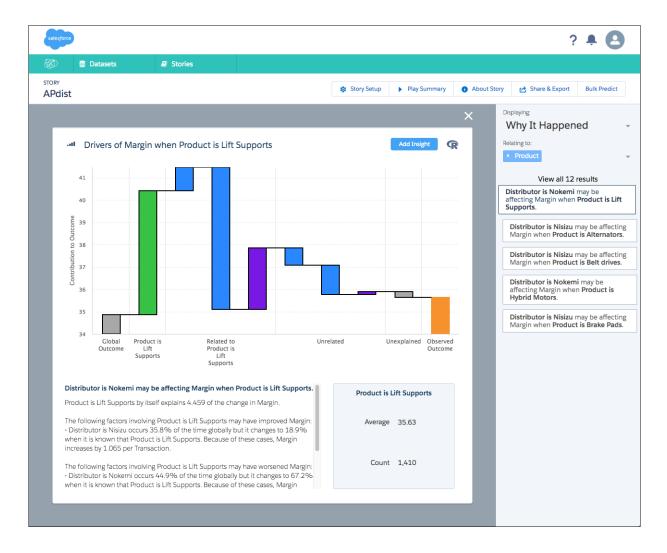
### Why It Happened Insights

Why It Happened insights are diagnostic. There might be several unrelated factors that contribute to a visual pattern you can see in an insight.

For each descriptive insight, Einstein Discovery automatically checks what other factors might be contributing to the pattern. Diagnostic insights help ensure that the patterns you focus on are real and not accidents of the data.

- 1. In the Recommended Insights On menu on the right, click Why It Happened.
- 2. To view an insight and optionally add it to your story, click a result.

The global average value for the outcome variable is the gray bar. From there, you can explore the increase or decrease that significant variables contribute in the waterfall by hovering over each bar. For transparency, experts can export and review the precise model generated as part of the analysis in the form of open standards-compliant R code by clicking the R button. Even the model validation results are available at the bottom of the R code.

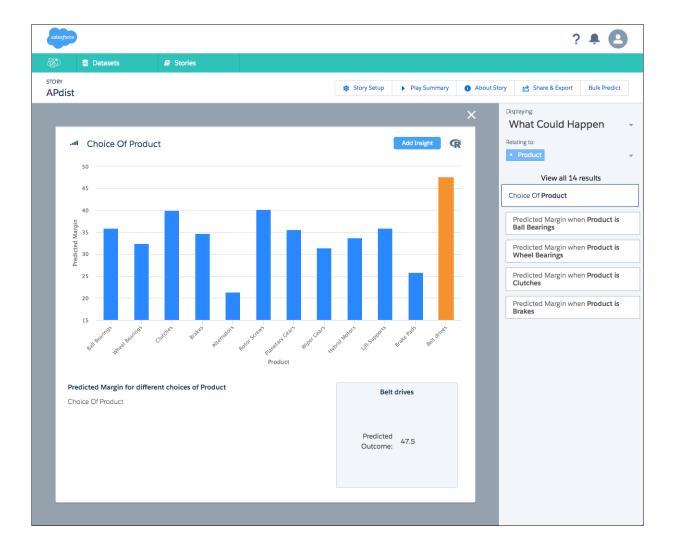


### What Could Happen Insights

What Could Happen insights are predictive.

Einstein Discovery conducts predictive analysis to select the descriptive insights and to make prescriptive recommendations. Predictions are similar to the kind of regression or machine-learning analysis that data scientists conduct using advanced analytics tools.

- 1. In the **Recommended Insights On** menu on the right, click **What Could Happen**. When the calculations are complete, the relevant insights are displayed in the View All Results section. You can explore your dataset in several ways: by the predictor variable, the predicted count, or regression terms. Knowing the most influential predictor variables can, for example, help a sales or marketing manager choose where to invest budget and which areas are less important. To see the predicted outcome and the explanations, choose various values of the predictor variables.
- 2. To view an insight and optionally add it to your story, click a result.
- 3. For the "Choice Of" insight, click a bar to see how setting the variable to that value influences the outcome. It's like a what-if scenario.

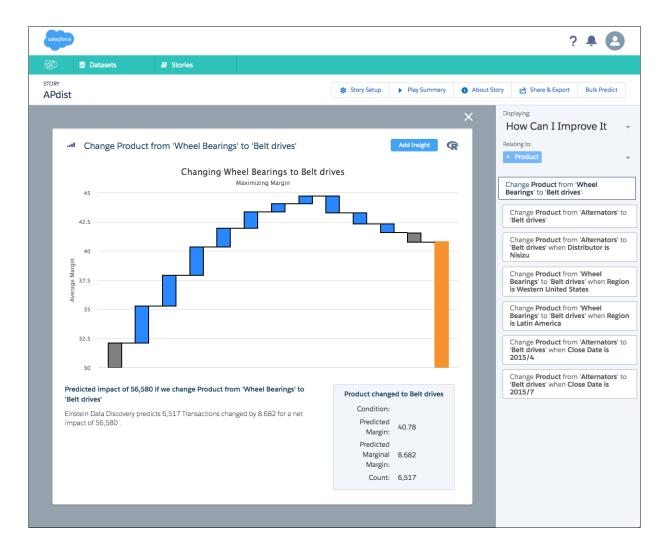


### How Can I Improve It Insights

You can explore which values of variables maximize or minimize your desired outcome. Einstein Discovery recommends specific actions, quantifies the expected impact, and explains the reasoning behind the recommendations.

These insights are prescriptive. Prescriptive findings are actionable.

- 1. In the **Recommended Insights On** menu on the right, click **How Can I Improve It**. Recommended actions that can improve the outcome are presented on the right.
- 2. Click the card with the recommended action that you want to explore. Einstein Discovery then suggests actions that you can take. When you run a prescriptive analysis for a specific variable, you get a rank-ordered list of things you can do to affect the outcome variable.
- **3.** To display a waterfall chart illustrating that insight, click a card.
- 4. If the insight is useful, click **Add Insight** to add it to your story.



### Interact with Insights

Interact with the insights to explore the story.

- 1. Get more detail by hovering over a bar in the graph. For a single-variable graph, a gray bar indicates values that are statistically similar to the overall average. For a two-variable graph (drill-downs into subsets of the data), a gray bar indicates cases where the differences in the two groups are statistically unsound. You can't safely act on visibly apparent differences in the gray bars because if the data had been collected on a different day, or a few outliers had been removed, the bars could significantly change. The y-axis is automatically set to start from 0 or the minimum value.
- **2.** Below the graphs is a text summary explaining the key points in each graph. The average outcome is indicated on the chart as a dashed line.
- **3.** To remove the insight from your story, click the trash icon.
- **4.** To change the chart options, such as the chart type or filter options, click the gear icon. To apply the changes, click **Close**.
- **5.** If the insights are useful, click **Add Insight** to add it to your story. If the insight is already in your story, the button is unavailable and says **Already in Story**.

### **EDITIONS**

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#### **USER PERMISSIONS**

To use a story:

Use Einstein Discovery

### **Examine the Story Timeline**

Learn which factors drive changes over time.

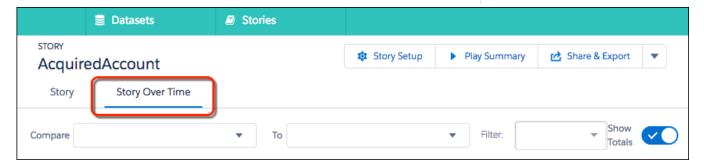
The story timeline shows you what happened and why. You can also compare a different time period with the equivalent period in previous years. For example, comparing the fourth quarter of this year with the fourth quarter of the previous year.

- 1. Open a story.
- 2. Click the Story Over Time tab.

## EDITIONS

Available in Salesforce Classic and Lightning Experience.

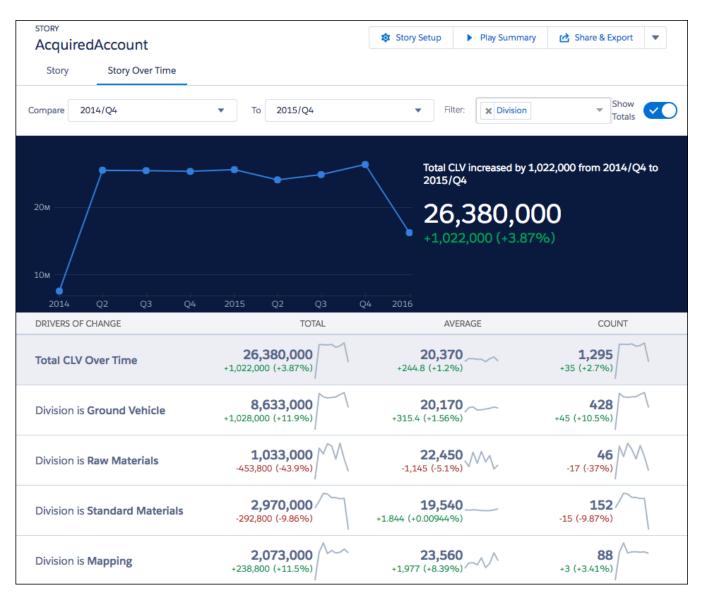
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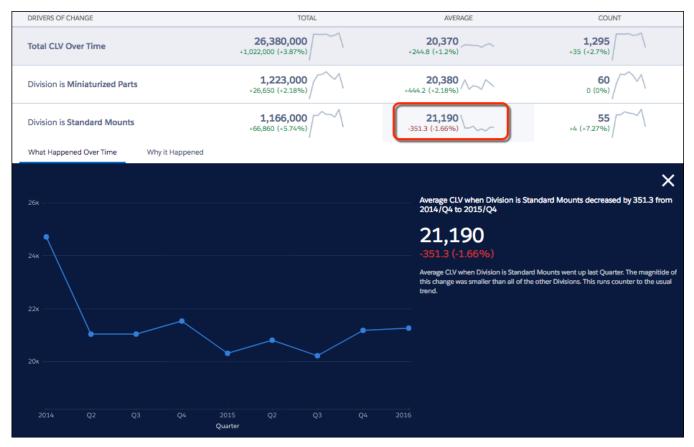
- 3. In the **Compare** dropdown list, select the start of the time period and in the **To** dropdown list, select the end of the time period.
- **4.** Optionally, in the **Filter** dropdown list, select one or more variables to filter by.
- **5.** Turn on or off the display of totals by using the **Show Totals** toggle switch.

The timeline analysis at the top is based on the date field and frequency that was selected when you set up your story. To see the totals for each time period, hover your mouse pointer over the graph.

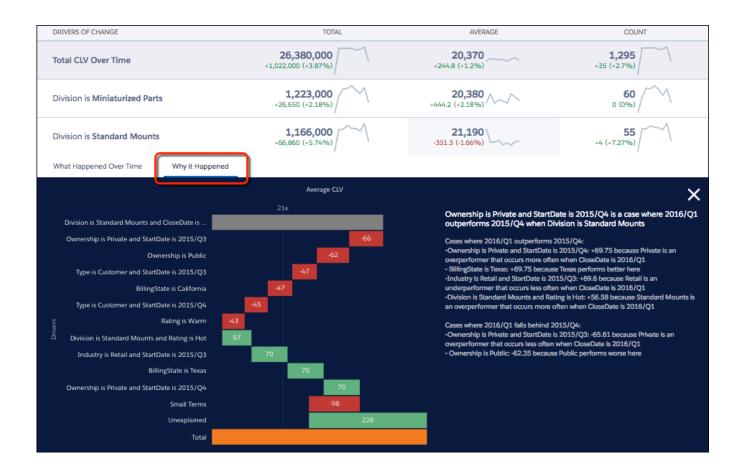
The drivers of change are listed under the timeline graph. To change the sort order, click a column header.



**6.** To get more information about what happened over time for a particular driver of change, click its value in the Total, Average, or Count column.



If you selected a value in the Average column, you can click the Why it Happened tab to see diagnostic insights.



### Explore and Add More Insights to Your Story

Einstein Discovery presents the insights with the highest statistical importance and highlights the areas to focus on. You can further explore the data by changing the filters. As you explore, you can add insights to your story.

- 1. To open the list of filters, click the down arrow in the Relating to section.
- 2. Select a filter.
- **3.** When the calculations are complete, click a tile to open the insight.
- **4.** If the insights are useful, click **Add Insight** to add it to your story.

#### **EDITIONS**

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## USER PERMISSIONS

To use a story:

Use Einstein Discovery

### Improve the Story

Make your story even better with suggestions from Einstein Discovery.

Einstein Discovery identifies ways to improve your story. The story improver detects extreme values, identical values, variables with little variation, and highly correlated variables, making it easy to build your model based on best practices.

- 1. Open the story.
- **2.** Click the **Improvements Found** button.

The button is only visible if Einstein Discovery found opportunities to improve your story.

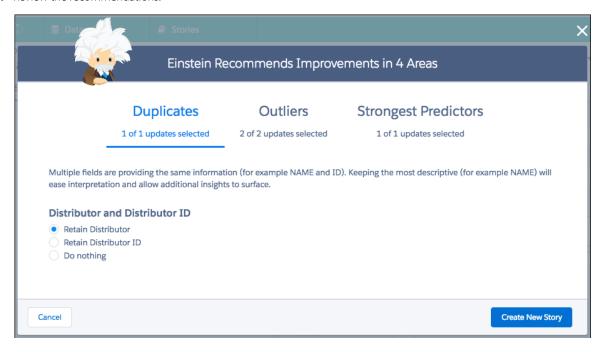
## EDITIONS

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3. Review the recommendations.



4. Click Create New Story.

### Refresh the Story

You can refresh a story with updated data and rerun the analysis.

This feature is currently available for stories that use Salesforce or CSV data.

- 1. Open the story.
- 2. Click Refresh Story.

The Create a New Story with Updated Data window opens.

- **3.** In the New Story Name field, type a name for the story.
- **4.** The Data Source section tells you what kind of data the story uses. If the story uses data from Salesforce, it will automatically refresh the data. If the story uses data from a CSV file, click the **Select CSV from your computer** button. Expand the Data Requirements section to view the column names that must be present in your CSV file.
- 5. Click Create New Story.

Note: The add derived column, add column from lookup table, and grouped table data transformations will not be automatically applied.

### Modify the Story Settings

After the initial analysis, you can change the story settings and rerun the analysis. Stay on top of changes and iterate the analysis.

- 1. On the Story Setup page, click Story Setup.
- 2. Modify one or more of the story settings.
- 3. When finished, click Create Story. To cancel and go back, click Back to Story.

### **EDITIONS**

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### **USER PERMISSIONS**

To use a story:

Use Einstein Discovery

### **EDITIONS**

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### **USER PERMISSIONS**

To use a story:

Use Einstein Discovery

## **View Story Details**

You can display a summary of the story details.

- 1. Open a story.
- 2. Click About Story.

A summary of the details about the story is displayed.

# **EDITIONS**

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## **USER PERMISSIONS**

To use a story:

Use Einstein Discovery

# Share or Export the Story

Getting insights is only half the adventure; the other half is acting on them. To involve others, share the story or export it to Analytics. You can also export customizable reports as Microsoft Word documents or PowerPoint slides. All reports include speaker notes written in plain language, so you can stop spending hours building and curating your reports.

## 1. Click Share & Export.

The Share and Export Story window lists the users with whom you can share the story. To locate a particular user, use the search box at the top right. You can share the story with people who have access to Einstein Discovery.

- 2. Click **Read Only** or **Read and Write** next to the users you want to share it with.
- 3. Click Apply Changes.
- 4. Click Export.
- **5.** To export the story as PowerPoint slides, click **Microsoft PowerPoint**. To export the story as a Word document, click **Word Document**. To export the story to Analytics, click **Wave App**.
- **6.** To close the Share and Export Story window, click the **X** at the top right.

# **EDITIONS**

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# **USER PERMISSIONS**

To use a story:

Use Einstein Discovery

# Display Einstein Discovery Recommendations in a Salesforce Object

Use the predictive power of Einstein Discovery to improve your everyday business decisions. With some configuration, Einstein Discovery can predict an outcome or recommend a course of action for a Salesforce object of your choice.

#### IN THIS SECTION:

#### Deploy an Einstein Discovery Story

Einstein Discovery uses stories to create predictions and recommendations. Create and deploy a story to use for your predictions.

## Install the Managed Package

Your Salesforce admin must install the Salesforce managed package to enable Einstein Discovery recommendations in a Salesforce Object.

### Create Custom Fields in Salesforce to Display Recommendations

You create custom fields in Salesforce to display the outcome, explanation, and prescription information imported from Einstein Discovery.

#### Connect Einstein Discovery to Your Custom Fields

To import the recommendations, you connect your custom fields with Einstein Discovery.

## Create an Apex Trigger

The Apex trigger is fired when a Salesforce object's records are inserted or updated.

## Add Einstein Discovery Recommendations to a Salesforce Lightning Page (Pilot)

After you deploy a recommendation, add it to an object's record page. You can use this pilot feature with stories that are created using only one Salesforce object.

## Enhance an Existing Prediction and Recommendation Model

To enhance a recommendation model, you can create extra models that are relevant to the same Salesforce object.

#### Modify Settings for Deployed Recommendations

You can view deployed recommendations, change the order, deactivate, or delete them.

# Deploy an Einstein Discovery Story

Einstein Discovery uses stories to create predictions and recommendations. Create and deploy a story to use for your predictions.

You can use any type data that is supported by Einstein Discovery.

1. In your Salesforce org, click the App Launcher icon ( ), search for Einstein Discovery, and then click the Einstein Discovery tile.



**Note**: You cannot use this feature if you log in to Einstein Discovery directly with a user name and password.

# **USER PERMISSIONS**

To connect an Einstein Discovery story to a Salesforce object

 Connect Einstein Discovery Model

- **2.** Create a dataset by importing data from a Salesforce object as described in Connect to Salesforce to Create a Dataset on page 760. When the dataset is ready, it appears in the list of datasets.
- 3. Create a story with that dataset as described in Create a Story to Uncover Relationships on page 770.

Now that you've created the story, deploy recommendations from the story to your Salesforce organization. The way that you deploy a story depends on whether or not the story was created using data from a Salesforce object.

To deploy a story that was created using data from a Salesforce object:

1. Open the story, click the arrow next to **Share & Export**, then select **Deploy to Salesforce**.

You see the Deploy Recommendations to Salesforce wizard. If no other recommendations have previously been deployed, you see a screen that asks you to specify a name for the prediction.



**Note**: If recommendations were previously deployed, you see a screen that asks you to select either **Deploy new Prediction & Recommendation model**. These instructions show you how to deploy a new story so select **Deploy new Prediction & Recommendation model**. If you want to see how to enhance an existing story, refer to the next section.

- 2. In **Recommendation Label**, enter a name for the recommendation. This name is displayed to users later in the list of deployed recommendations on the Recommendations tab.
- 3. Click Next. You see a screen that asks if you want to focus on a particular segment in your data set.
- 4. Select either No segment (use all data selected on previous page) or Yes, focus on a segment (Advanced).

This feature lets you segment your stories. With segmented stories, you control which records use the recommendation model. For example, if you select "Division equals Naval" then the model will only be applied to Salesforce records where the division is naval. For all records where the division is not naval, that model is not applied. If other models are configured on the records where division is not naval, they are applied.

- **5.** Click **Next**. You see a screen that asks you to verify the information.
- 6. Click Deploy.

To deploy a story that was not created using data from a Salesforce object (for example, a CSV file):

1. Open the story, click the arrow next to **Share & Export**, then select **Deploy to Salesforce**.

You see the Deploy Recommendations to Salesforce wizard

2. Choose the object that you want to deploy the story to.

Because this story wasn't created using a Salesforce object, you need to tell Einstein Discovery which object you want to deploy it to. You must choose an object that contains the outcome variable from the story. If you select an object that does not contain the outcome variable, you see an error message warning you that the outcome field is missing.

The object must have the outcome field (which maps to the outcome variable for the story), but it does not have to contain all the other variables from the story. If the object does not contain all the required fields, you can use an Apex trigger to create them. If you see a warning about missing fields, copy the field names so you can add them later when creating an Apex trigger.

#### 3. Click Next.

If no other recommendations have previously been deployed, you see a screen that asks you to specify a name for the prediction.

- Note: If recommendations were previously deployed, you see a screen that asks you to select either **Deploy new Prediction** & **Recommendation model**. These instructions show you how to deploy a new model so select **Deploy new Prediction & Recommendation model**. If you want to see how to enhance an existing model, refer to the next section.
- 4. Click Next. You see a screen that asks you if you want to focus on a particular segment in your data set.
- 5. Select either No segment (use all data selected on previous page) or Yes, focus on a segment (Advanced).

This feature lets you segment your stories. With segmented stories, you control which records use the recommendation model. For example, if you select "Division equals Naval" then the model will only be applied to Salesforce records where the division is naval. For all records where the division is not naval, that model is not applied. If other models are configured on the records where division is not naval, they are applied.

- **6.** Click **Next**. You see a screen that asks you to verify the information.
- 7. Click Deploy.

You have successfully deployed your new story to a Salesforce object.

# Install the Managed Package

Your Salesforce admin must install the Salesforce managed package to enable Einstein Discovery recommendations in a Salesforce Object.

Before installing the managed package, Einstein Discovery must be enabled in your Salesforce org. For more information, see the Einstein Discovery setup documentation.

- In your browser, navigate to https://login.salesforce.com/packaging/installPackage.apexp?p0=04t1H000000zPOG You see the Install Einstein Discovery Prediction page.
- 2. If prompted, enter your login information.
- 3. On the Install Einstein Discovery Prediction page, select Install for Admins Only.
- 4. Select I acknowledge that I'm installing a Non-Salesforce Application that is not authorized for distribution as part of Salesforce's AppExchange Partner Program.
- 5. Click Install.
- **6.** When you see a message indicating that the installation is complete, click **Done**. In Setup, on the Installed Packages page, you see a package named Einstein Discovery Prediction.

# Create Custom Fields in Salesforce to Display Recommendations

You create custom fields in Salesforce to display the outcome, explanation, and prescription information imported from Einstein Discovery.

- 1. From Setup, select Customize and then click the Salesforce object that you want to add the fields to.
- 2. Click Add a custom field.
- **3.** Add a field to store the Einstein Discovery outcome information.
  - **a.** In the Custom Fields & Relationships section, click **New**.
  - **b.** Select **Number**, and click **Next**.
  - c. Enter a field label. For example, Discovery Outcome. The field name is filled in automatically. Click Next.
  - **d.** On the Establish field-level security page, specify the field's access settings for each profile. Only a trigger should make changes to the custom field, so select the **Visible** checkbox and the **Read-Only** checkbox on the applicable profiles. Click **Next**.
  - e. Choose which page layouts display the field. Click Save & New.
- **4.** Add a field to store the Einstein Discovery explanation information.
  - a. Select Text Area (Long), and click Next.
  - **b.** Enter a field label. For example, *Discovery Explanation*. Click **Next**.
  - **c.** On the Establish field-level security page, specify the field's access settings for each profile. Only a trigger should make changes to the custom field, so select the **Visible** checkbox and the **Read-Only** checkbox on the applicable profiles. Click **Next**.
  - d. Choose which page layouts display the field. Click Save & New.
- **5.** Add a field to store the Einstein Discovery prescription information.
  - a. Select Text Area (Long), and click Next.
  - **b.** Enter a field label. For example, *Discovery Prescription*. Click **Next**.
  - **c.** On the Establish field-level security page, specify the field's access settings for each profile. Only a trigger should make changes to the custom field, so select the **Visible** checkbox and the **Read-Only** checkbox on the applicable profiles. Click **Next**.

## **USER PERMISSIONS**

To read, create, update, or delete connected apps:

 Customize Application AND Modify All Data OR Manage Connected Apps **d.** Choose which page layouts display the field. Click **Save**.

The three new custom fields are now in the Custom Fields & Relationships list. They are also visible on the object's detail page, depending on the page layout. Next, put the fields in their own section in the page layout.

# Connect Einstein Discovery to Your Custom Fields

To import the recommendations, you connect your custom fields with Einstein Discovery.

- 1. From Setup, select **Develop** then select **Custom Settings**.
- 2. Next to Einstein Discovery Write Back, click Manage and then click New.
- 3. Fill out the information. Note that you need to use field names, not field labels.
  - **a.** Name—This integration name is used when the Apex trigger references the custom setting data. Note the name because you use it when you create the Apex trigger. You use this value to replace [NameOfCustomSetting] in the sample code.
  - **b.** Commentary Field Name the name of the field you created to store the Einstein Discovery explanation information. For example, *Discovery Explanation c.*
  - **c.** Object—The Salesforce object where you added the custom fields. For example, *Case*.
  - **d.** Outcome Field Name—The field label that you created, for example <code>Discovery\_Outcome\_c</code>.
  - **e.** Prediction Definition Id—The ID number of the Einstein Discovery story from which you want to import the recommendations. To copy the Prediction Definition ID, select the Recommendations tab in Einstein Discovery. Select your recommendation, then select **Activation Steps**.
  - $\textbf{f.} \quad \textit{Prescription Field Name} \\ -\textit{The name of the prescription field that you created, for example } \\ \textit{Discovery\_Prescription\_\_c.}$
- 4. Click Save.

# Create an Apex Trigger

The Apex trigger is fired when a Salesforce object's records are inserted or updated.

The trigger calls the API that generates the prediction. The prediction is based on the field data in the object and the story that you created in Deploy an Einstein Discovery Story.

You must add a trigger to the object that Einstein Discovery is making the recommendations on. You must also add a trigger to related objects if the story uses their fields to calculate the prediction.

USER PERMISSIONS

To define an Apex trigger:

Author Apex

For example, supposed you want to set up predictions on the Deal object. You must set a trigger on the Deal object itself. You may also need to set a trigger on the Account object, if any of its fields affect the prediction.

The following steps show the different types of triggers you can use.

- 1. From Setup, select **Customize** and then click the object that you want to add the trigger to.
- 2. Click **Triggers** and then click **New**.
- 3. To define your trigger, enter Apex code similar to this sample code.
  - **a.** Replace [ObjectName] with the name of the object that you are adding the trigger to.
  - **b.** Replace [NameOfCustomSetting] with the integration name you created on the Einstein Discovery Integration information page.

### Apex trigger for single object with no data transformation

Use this example if the Salesforce object contains all of the fields that the Einstein Discovery story needs to make a prediction. In this case, all of the data that the story requires exists in one object. Also, the data in the object is in the same format and has the same field name as the variables in the story.

```
trigger SetDealPrediction on [ObjectName] (after insert, after update) {
   if(System.isFuture()) return;
   if(ed_insights.CheckRecursive.runOnce()) {
     // custom Settings' name
   String CONFIG_NAME = '[NameOfCustomSetting]';
   ed_insights.TriggerHandler.insertUpdateHandle(CONFIG_NAME);
   }
}
```

## Apex trigger for multiple objects with no data transformation

Use this example if the Einstein Discovery story needs data from more than one Salesforce object. Replace [SOQLQuery] with the SOQL query that retrieves the required data. Note that this type of trigger does not do any data transformation, so the field name and data type in the Einstein Discovery story must match the variable names and data type in the Salesforce object.

```
trigger SetDealPredictionByAccount on Account (after insert, after update) {
   if(System.isFuture()) return;
   if(ed_insights.CheckRecursive.runOnce()) {
        // custom Settings' name
        String CONFIG_NAME = 'Deal';
        // custom query
        String CUSTOM_QUERY = '[SOQLQuery]';
   ed_insights.TriggerHandler.insertUpdateHandleForCustomQuery(CONFIG_NAME,CUSTOM_QUERY);
   }
}
```

#### Apex trigger with data transformation

Use this example if you need to perform some transformation on the data in the Salesforce object. The transformation in the Apex trigger will convert the data in the Salesforce object into a format that the Einstein Discovery story can use.

```
trigger SetDealPredictionWithDerivedFields on Deal_c (after insert, after update) {
    if(System.isFuture()) return;

    if(ed_insights.CheckRecursive.runOnce()) {
        // customSettings' name
        String CONFIG_NAME = 'Deal';

        // convert the list of objects into a list of field-value map
        List<Map<String, String>> fieldValues = new List<Map<String, String>>();

    for (Integer i = 0; i < Trigger.new.size(); i++) {

        SObject sObj = Trigger.new.get(i);
        // the field-value Map to be passed to the setPredition() method
        Map<String, String> fieldStringMap = new Map<String, String>();

        Map<String, Object> fieldsMap = sObj.getPopulatedFieldsAsMap();

        for (String field : fieldsMap.keySet()) {
```

```
Object obj = fieldsMap.get(field);
                if (obj instanceof String) {
                    // String value fields
                    fieldStringMap.put(field, (String) obj);
                } else if (obj instanceof SObject) {
                    // referenced object fields
                    Map<String, Object> refFieldsMap =
((SObject)obj).getPopulatedFieldsAsMap();
                    for (String refField : refFieldsMap.keySet()) {
                        // field name as [referenced field].[field name]
                        fieldStringMap.put(field + '.' + refField,
String.valueOf(refFieldsMap.get(refField)));
                } else {
                    // non-String value fields
                    fieldStringMap.put(field, String.valueOf(obj));
            fieldValues.add(fieldStringMap);
        }
        for (Map<String, String> fieldValueMap : fieldValues) {
            // add derived fields
            String productName = fieldValueMap.get('Product c');
            if (productName.equals('P100')) {
                fieldValueMap.put('Product_Option__c', '0100');
                fieldValueMap.put('Product Warranty c', 'W100');
        }
        // make setPrediction call
        ed insights.TriggerHandler.insertUpdateHandleForFieldValues(CONFIG NAME,
JSON.serialize(fieldValues));
```

- **4.** Make sure that **Is Active** is selected.
- 5. Click Save.

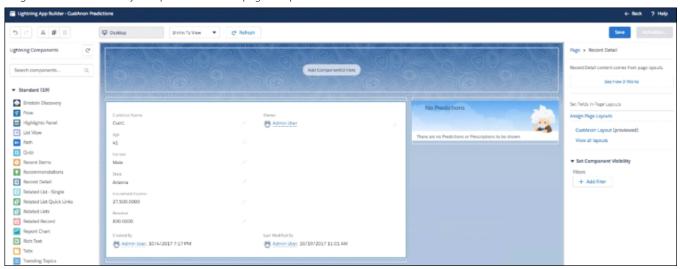
When records of this type are created or updated, the trigger fires and gets the recommendations from Einstein Discovery.

# Add Einstein Discovery Recommendations to a Salesforce Lightning Page (Pilot)

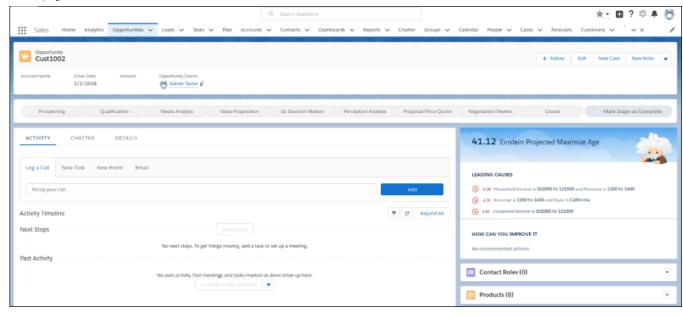
After you deploy a recommendation, add it to an object's record page. You can use this pilot feature with stories that are created using only one Salesforce object.

- 1. Log in to your Salesforce org.
- 2. From Setup, click **Lightning App Builder**.
- 3. Click New.
- 4. Click Record Page.

- 5. Click Next.
- 6. Enter a label for the recommendation and in the Object field, select the Salesforce object that it applies to. Click Next.
- 7. Select a page template and then click **Finish**.
- 8. Drag the Einstein Discovery component onto the page template.



- 9. Add other components that you want to include in the page. For example, the Record Detail component.
- 10. Click Save.
- 11. Click Activate.
- 12. Click Assign as Org Default.
- 13. Click Save.
- **14.** Open the record detail page for the object that the recommendation is about. Einstein Discovery recommendations are displayed on the page.



# Enhance an Existing Prediction and Recommendation Model

To enhance a recommendation model, you can create extra models that are relevant to the same Salesforce object.

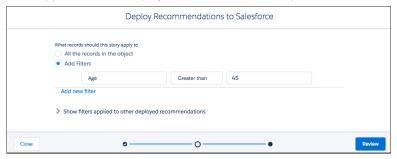
You can segment your population to have multiple models (one per segment) that does the same prediction. For example, if you want to predict time to close on an opportunity, you might have a model for time to close for small opportunities, and a model for time to close for large opportunities. The reason you might do that is if the behavior of your opportunities changes depending on their size. You could create a model on your large opportunities dataset and export that to Salesforce. Then you could create a model on your small opportunities dataset and append your small model to the same prediction and recommendation settings. In this context, the "model" is the segment.

1. Open the story and in the drop-down menu on the top-right side, click **Deploy Story**.



You see the Deploy Recommendations to Salesforce wizard. If recommendations were previously deployed that apply to that Salesforce object, you see a screen that asks you to select either **Deploy new Prediction & Recommendation model** or **Enhance an existing Prediction & Recommendation model**. This option is only available when at least 1 recommendation has been deployed. If you select **Deploy new Prediction & Recommendation model**, it creates a different custom field for the same object or you can click **Enhance an existing Prediction & Recommendation model** to enhance the one you already have.

- Note: It is possible to deploy recommendations multiple times from the same story, but in general, this approach is not a best practice. Instead, create a new story that investigates a different angle.
- 2. Click Enhance an existing Prediction & Recommendation model.
- **3.** Select a recommendation model from the list.
- 4. Click Add Filters.
- 5. Select to add the recommendation model to all records or to add filters. To see which filters have already been applied, click **Show filters applied to other deployed recommendations**. If you want to add a filter, click **Add new filter**.

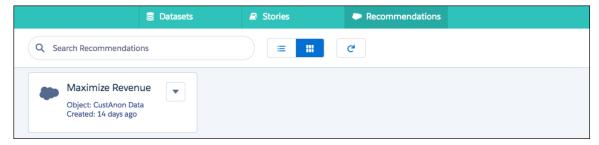


- 6. Click Review.
- 7. Click Deploy.
- 8. Click View Recommendation.

# Modify Settings for Deployed Recommendations

You can view deployed recommendations, change the order, deactivate, or delete them.

To see the list of recommendations that you have deployed to Salesforce, click the **Recommendations** tab. The recommendations that have been deployed are displayed. Click a recommendation to open the Deployed Stories page.



To change to order of the prediction definitions, click the arrows in the REORDER column to move them up or down in the list. Click **Save**. On the Deployed Stories page, click the tile for a deployed recommendation. You see the all of the different models that apply to that deployed recommendation. For example, there is one model that will be used for when a Salesforce object's gender field is female and one model for when gender is male. For each record in the Salesforce object, when a record is modified and saved, Salesforce checks the filter conditions in the order that they appear. As soon as a match is found, the model is applied to the record and none of the other models are used. In other words, only the first filter that matches the model that will be applied.

To deactivate all of the deployed recommendations for a particular prediction definition, click **Deactivate** at the top-right corner of the page.

To deactivate a particular model, click the down arrow at the end of the table row and then click **Deactivate**. The status displayed in the table will change to "lnactive".

To delete all of the deployed recommendations for a particular prediction definition, click **Delete** at the top-right corner of the page.

To delete a particular model, click the down arrow at the end of the table row and then click **Delete**. The status displayed in the table will change to "Inactive".

# Learn Einstein Discovery with Trailhead

Trailhead is the fun and free way to learn Salesforce. Now you can get acquainted with Einstein Discovery through Trailhead.

Gain Insight with Einstein Discovery: https://trailhead.salesforce.com/trails/wave\_analytics\_einstein\_discovery

# **Einstein Discovery Limits**

Einstein Discovery limits the number of rows and columns per dataset.

### **Dataset Storage Limits**

| Number      |
|-------------|
| 100 million |
| 200         |
| 50          |
|             |

#### **Developer Edition Limits**

The following limits apply to the free trial Einstein Discovery Developer Edition. This edition restricts the dataset size but provides the capabilities of the full product.

| Limit                       | Number |
|-----------------------------|--------|
| Maximum number of data rows | 50,000 |
| Maximum number of columns   | 12     |

# **Einstein Discovery Considerations**

Einstein Discovery differs from other Salesforce features in some ways.

- Einstein Discovery isn't localized.
- Accessibility features aren't incorporated into Einstein Discovery.
- To display Einstein Discovery recommendations in a Salesforce object, your Salesforce administrator must install a managed package provided by Salesforce.
- When you create a sandbox, Salesforce does not copy the Einstein Discovery dataset or story from your production org to the sandbox org. A new instance of Einstein Discovery is created.
- Supported browsers: The most recent stable version of Google Chrome<sup>™</sup> is supported.
- Stories that are exported to Microsoft PowerPoint or Microsoft Word can be viewed in versions 2013 or later.

# Learn More with Einstein Data Insights (Pilot)

Reports show you data, but what does the data mean? Wonder no more! Introducing Einstein Data Insights: a smarter report. Einstein automatically analyzes report data and summarizes key takeaways, comparisons, and trends with insightful charts and metrics. It's one-click data science!



**Note:** We provide Einstein Data Insights to selected customers through a pilot program that requires agreement to specific terms and conditions. To be nominated to participate in the program, contact Salesforce. Pilot programs are subject to change, and we can't guarantee acceptance. Einstein Data Insights isn't generally available unless or until Salesforce announces its general availability in documentation or in press releases or public statements. We can't guarantee general availability within any particular time frame or at all. Make your purchase decisions only on the basis of generally available products and features.

Here's how it works.

First, run a report. Then, to start an analysis click Einstein Data Insights.

Einstein analyzes all the data returned by your report, and none of the data that it doesn't, so be sure to include everything you're interested in. If you create a report that returns all opportunities, then Einstein analyzes all opportunities. If you filter the report so that it doesn't return open opportunities, then Einstein doesn't analyze open opportunities.

And when we say that Einstein analyzes all opportunities, we mean up to 500,000 opportunities and 25 columns! Einstein analyzes more than just the 2,000 records displayed in a report. Because Einstein includes so many records in each analysis, the insights you get are accurate, actionable, and amazing.

So, what do you think? What can Einstein tell you about your report data?

#### IN THIS SECTION:

#### Set Up Einstein Data Insights (Pilot)

To set up Einstein Data Insights, first enable it for your org. Then, grant access to users.

# EDITIONS

Available in both Salesforce Classic and Lightning Experience

Available in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

## Get Einstein's Insights About Your Report Data (Pilot)

To start getting insights about your report data, run a report. Let Einstein take care of the rest.

## Einstein Data Insights: Limits and Considerations (Pilot)

As you prepare to conduct analyses with Einstein Data Insights, take note of these limits and considerations.

# Set Up Einstein Data Insights (Pilot)

To set up Einstein Data Insights, first enable it for your org. Then, grant access to users.



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#### IN THIS SECTION:

#### Enable Einstein Data Insights (Pilot)

After Salesforce turns on Einstein Data Insights for your org, enable it.

## Grant Access to Einstein Data Insights (Pilot)

After Salesforce turns on Einstein Data Insights for your org, give your users access to Einstein Data Insights with a user permission.

# Enable Einstein Data Insights (Pilot)

After Salesforce turns on Einstein Data Insights for your org, enable it.



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- **1.** From Setup, enter *Einstein Data Insights* in the Quick Find box, then, under Einstein Data Insights, click **Getting Started**.
- 2. Click (flick?) the **Disabled** switch.

If the switch is labeled **Enabled**, then Einstein Data Insights is already turned on. Go analyze some data!

The switch toggles from Disabled to Enabled, and Einstein Data Insights is turned on.

Next, grant people access to Einstein Data Insights.

# **EDITIONS**

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Available in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **EDITIONS**

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Available in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# **USER PERMISSIONS**

To enable Einstein Data Insights:

Customize Application

## Grant Access to Einstein Data Insights (Pilot)

After Salesforce turns on Einstein Data Insights for your org, give your users access to Einstein Data Insights with a user permission.



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After Salesforce turns on Einstein Data Insights for your org, a new permission set called **Power Insights User** gets created automatically. To give someone access to Einstein Data Insights, assign the **Power Insights User** permission set to them.

The **Power Insights User** permission set has the requisite user permission for accessing Einstein Data Insights: **Can run Power Insights**.

- 1. From Setup, enter Permission Sets in the Quick Find box, then select Permission Sets.
- 2. Click Power Insights User.
- 3. Click Manage Assignments > Add Assignments.
- **4.** Select everyone you want to grant Einstein Data Insights access to.
- 5. Click Assign.

Everyone you selected now has access to Einstein Data Insights. The next time they run a report, they'll see the **Einstein Data Insights** button, and they'll be able to start an analysis.

If you want to create your own permission set, give it a Power Insights Platform license. Otherwise, you won't be able to add the **Can run Power Insights** user permission. If you create a permission set with the Power Insights Platform license, then the only user permission you can assign it is **Can run Power Insights**. Instead of creating a permission set for Einstein Data Insights, we recommend using the permission set that was automatically created when Salesforce turned on Einstein Data Insights for your org, **Power Insights User**.

# Get Einstein's Insights About Your Report Data (Pilot)

To start getting insights about your report data, run a report. Let Einstein take care of the rest.



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#### IN THIS SECTION:

#### Start an Analysis (Pilot)

Start an analysis to begin getting insights about your report data.

# **EDITIONS**

Available in both Salesforce Classic and Lightning Experience

Available in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

## **USER PERMISSIONS**

To assign a permission set to users:

Assign Permission Sets

To create a permission set:

 Manage Profiles and Permission Sets

# EDITIONS

Available in both Salesforce Classic and Lightning Experience

Available in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

## Read and Interpret Insights (Pilot)

Einstein Data Insights provide useful information about your report data with charts, comparisons, and trends. Need help reading an insight? Wondering how each insight gets produced? Let's go over a few insights together.

# Start an Analysis (Pilot)

Start an analysis to begin getting insights about your report data.



Note: We provide Einstein Data Insights to selected customers through a pilot program that requires agreement to specific terms and conditions. To be nominated to participate in the program, contact Salesforce. Pilot programs are subject to change, and we can't guarantee acceptance. Einstein Data Insights isn't generally available unless or until Salesforce announces its general availability in documentation or in press releases or public statements. We can't guarantee general availability within any particular time frame or at all. Make your purchase decisions only on the basis of generally available products and features.

Remember, Einstein does the analytic heavy lifting for you. You don't have to group report data, or summarize it, or chart it. (Though you certainly can if you'd like!) Einstein does it for you while analyzing your report data, and Einstein summarizes the key takeaways.

1. Run a report.

For help building a report, see Build a Report in Salesforce Help.

#### 2. Click Einstein Data Insights.

The Einstein Data Insights panel appears, and Einstein begins analyzing your report data. After a moment, Einstein presents an analysis to you based on how often items appear in your report.

3. Browse through insights by scrolling down. When you find a compelling insight and want more details, interact the insight to learn more. You can:

## Click a chart segment to get more info

When you click a chart segment, Einstein tells you more about the segment:

- A note appears that tells you more about the data appears in the insight.
- Rows in the underlying report that comprise the data in the chart segment get highlighted.
- A link appears at the bottom of the insight card that prompts you to get even more insights about the data.

For example, say Einstein surfaces an insight about the Lead Source column in your opportunity report. Right away, you can see how many opportunities came from each lead source. If you click the **Partner** bar, then Einstein tells you, quote "Partner occurs 65.4% less often than average." Report rows for which Lead Source equals Partner are highlighted in blue, so you can easily identify them. And if you click **Lead Source is Partner**, a new set of insights focusing on Lead Source is Partner appears.

## Show or hide significant data

If you want to see more, or if you want to focus only on data that Einstein determines to be statistically significant, hiding the noise, toggle Only Significant.

## Like or dislike an insight

To show your support for helpful insights, click .

To let Einstein know that an insight wasn't helpful, click .

4. See other types of Insights by clicking Compare or Trend. Or, check to see if there are any data quality recommendations by clicking **Quality**. You can always return to the first set of insights by clicking **Explore**.

Here're the types of insights found in each section:

# **EDITIONS**

Available in both Salesforce Classic and Lightning Experience

Available in Enterprise, **Performance**, and **Unlimited** Editions, Also available in **Developer** Edition.

# **USER PERMISSIONS**

To start an analysis:

Can run Power Insights

#### **EXPLORE**

Groups report data and shows how measures change by group. The default measure is count. Other measures are derived from numeric columns in the report, like Amount, Age, or Probability.

#### **COMPARE**

Shows how often a condition occurs across all data, then adds a constraint and shows how often the same condition occurs given the constraint.

#### **TREND**

Shows how measures change over time.

#### **QUALITY**

See recommendations for improving report data, like potential outliers.

- **5.** Hone the analysis in on a particular column by clicking **Top Insights** and selecting a column. You can focus the analysis on more than 1 column.
- **6.** To change the analysis measure, click **how often items appear in your report**. Then, choose a measure from the dropdown. The default analysis measure, **How Often Items Appear**, is based on a count of records. The other measures are drawn from columns in the report. If you can't find the measure you want, edit the report and add the desired column. Measures are only based on numeric columns.
  - **a.** Specify whether an increase in the selected measure is good or bad by clicking the toggle.
  - b. Click Start Analysis.

Einstein begins analyzing report data based on your chosen measure.

7. Continue to browse through insights and engage with the ones you find most compelling.

Want more information about an insight? Wondering how Einstein Data Insights produced an insight? See Read and Interpret Insights (Pilot) in Salesforce Help.

# Read and Interpret Insights (Pilot)

Einstein Data Insights provide useful information about your report data with charts, comparisons, and trends. Need help reading an insight? Wondering how each insight gets produced? Let's go over a few insights together.



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## **Explore**

Each Explore insight is derived from a measure and a data group. The default measure is count (how often items occur). The groups don't come from groups you add to the report. Instead, Einstein Data Insights groups and regroups data dynamically. For each group, Einstein Data Insights applies the measure, creates a chart, and surfaces the results as an insight.



Available in both Salesforce Classic and Lightning Experience

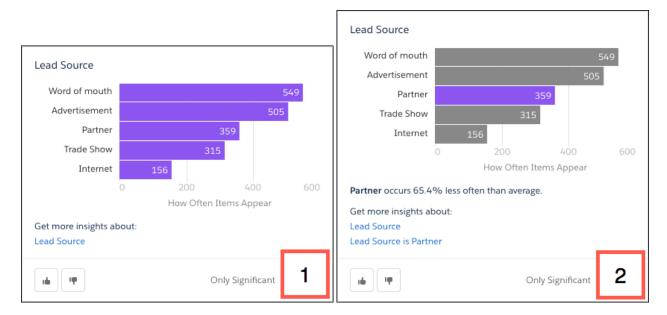
Available in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

# USER PERMISSIONS

To read an analysis:

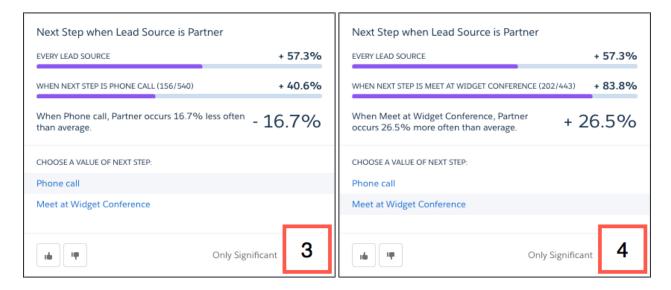
Can run Power Insights

For example, run Einstein Data Insights on a standard opportunity report, and you may get insights about Lead Source. This example analysis is based on how often items appear.



Einstein Data Insights groups report data by Lead Source. Einstein Data Insights charts how many opportunities there are by each lead source [1].

When you click the **Partner** chart segment, Einstein Data Insights tells you that Partner occurs 65.4% less often than average [2]. Is that more partner-sourced opportunities than you expect? Less? Not sure? Already, you have an actionable insight! To get more info, click **Lead Source is Partner**. Einstein Data Insights produces a new set of insights.

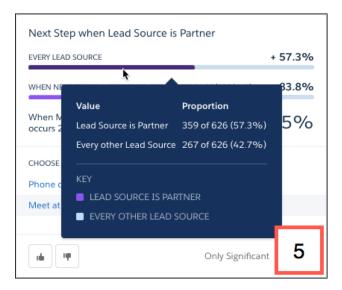


Einstein surfaces a new set of insights which are focused on how the count of opportunities changes based on conditions defined in the insight card title constraints drawn from the report.

The top insight calls your attention to Next Step when Lead Source is Partner [3]. Einstein found this scenario interesting, and thinks you will too! It compares how often Lead Source is **Partner** occurs across all opportunities (57.3%) with how often Lead Source is **Partner** occurs when Next Step is **Phone Call** (40.6%). Looks like the rate decreases significantly.

Finally, Einstein Data Insights calls your attention to other significant constraints from the data, like Next Step is **Meet at**Widget Conference [4]. Note the change: Lead Source is Partner still occurs 57.3% of the time accross all opportunities, but when Next Step is **Meet at Widget Conference**, Lead Source is **Partner** occurs 83.8% of the time.

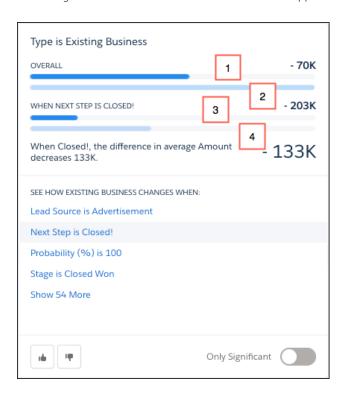
Interesting! Let's share these results with our marketing team to help them refine their lead generation process.



To get even more information from an insight, hover over chart segments [5].

# Compare

Compare insights show how measures change when certain conditions and constraints are applied.



This compare insight shows how Amount changes when:

- Type is **Existing Business**[1]
- Type is not **Existing Business**[2]

- Next Step is **Closed!** AND Type is **Existing Business**[3]
- Next Step is Closed! AND Type is not Existing Business[4]

From this insight, two things are clear.

First, when Type is **Existing Business**, average Amount is \$70,000 lower than Type is not **Existing Business**. Let's chat with our business development team about ways we can increase opportunity amount for deals with current customers.

Second, when Next Step is *Closed!* AND Type is not *Existing Business*, average amount is even lower: \$133,000 lower. When we chat with business development, we'll point out that amount falls sharply just before deals close.

#### Trend

Trend insights show how measures change over time.

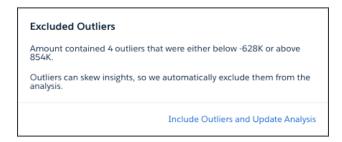
This trend insight shows a decrease in average amount when Lead Source is **Partner**.



My, what happened here!? Einstein Data Insights found that from 2015 to 2016, average amount decreased 98%. And look at the volatitlity beginning in 2013! We better rally our account executives to start working with partners to reverse average amount decline and restore reliable partner pipeline!

#### Quality

See recommendations for improving report data.



Outliers are excluded because they are 5 standard deviations away from the average. To include outliers, click **Include Outliers and Update Analysis**. If you want to exclude them again, from Quality, click **Exclude Outliers and Update Analysis**.

Analytics Reports and Dashboards

# Einstein Data Insights: Limits and Considerations (Pilot)

As you prepare to conduct analyses with Einstein Data Insights, take note of these limits and considerations.



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# EDITIONS

Available in both Salesforce Classic and Lightning Experience

Available in **Enterprise**, **Performance**, and **Unlimited** Editions. Also available in **Developer** Edition.

#### Limits

| Limit  | Number  |
|--|---------|
| Maximum number of records analyzed                 | 500,000 |
| Minimum number of records required for an analysis | 500     |
| Maximum number of columns analyzed                 | 25      |
| Minimum number of columns required for an analysis | 3       |

#### Considerations

- While Einstein Data Insights is available as a pilot, there are some known issues that you may encounter:
  - You'll occasionally see NaN in place of numerical values, indicating that a value is "Not a Number". This value is often returned
    when Einstein's calculation produces an undefined number, like dividing a number by 0.

# Reports and Dashboards

Salesforce offers a powerful suite of reporting tools that work together to help you understand and act on your data.

| Get Started with Reports and Dashboards                            |   |
|--|---|
| Learn Reporting Concepts and Build Your First Report and Dashboard | Trailhead  Reports and Dashboards (Lightning Experience) Reports and Dashboards (Salesforce Classic)  Help Reports Basics Dashboards Basics |

Analytics Reports and Dashboards

| Get Started with Reports and Dashboards |  |
|---|--|
|   | <ul> <li>Video</li> <li>Series: Get Started with Reports and Dashboards in Lightning Experience</li> <li>Series: Get Started with Reports and Dashboards in</li> </ul> |
|   | Salesforce Classic   |
| Review Report and Dashboard Limitations | ■ Help   |
|   | <ul> <li>Report Limits, Limitations, and Allocations</li> <li>Dashboard Limits, Limitations, and Allocations</li> </ul>  |

| Report on Your Data |  |
|---------------------|--|
| Build Reports       | <b>■</b> Help  |
|                     | Build a Report   |
|                     | Using the Drag-and-Drop Report Builder (PDF)   |
|                     | <ul> <li>Using Bucket Fields (PDF)</li> </ul>  |
|                     | <ul> <li>Report Formula Summary Functions (PDF)</li> </ul>                                     |
|                     | <ul> <li>What Are Joined Reports? (PDF)</li> </ul>   |
|                     | <b>▶</b> Video   |
|                     | Build a Report (Lightning Experience)  |
|                     | Getting Started with Report Builder (Salesforce Classic)                                       |
|                     | Getting Started with Buckets (Salesforce Classic)  |
|                     | Building Matrix Reports (Salesforce Classic)   |
|                     | <ul> <li>Introducing Joined Reports in Salesforce (Salesforce Classic)</li> </ul>              |
| Filter Reports      | ■ Help   |
|                     | Filter Report Data   |
|                     | Filter Across Objects with Cross Filters   |
|                     | Filter Reports Via URL Parameters in Lightning Experience                                      |
|                     | <b>▶</b> Video   |
|                     | How to Use Cross Filters (Lightning Experience)  |
|                     | <ul> <li>Dynamically Filter Reports Using URL Parameters<br/>(Lightning Experience)</li> </ul> |
|                     | <ul> <li>Using Cross Filters in Reports (Salesforce Classic)</li> </ul>                        |

Analytics Reports and Dashboards

| ■ Help   |
|--|
| Report and Dashboard Folders   |
| <b>▶</b> Video   |
| <ul> <li>Manage Report and Dashboard Folders (Lightning Experience)</li> </ul>     |
| ■ Help   |
| Schedule and Subscribe to Reports  |
| <ul> <li>FAQ: Scheduling Reports (PDF)</li> </ul>                                  |
| <b>▶</b> Video   |
| <ul> <li>Subscribe to Reports and Dashboards (Lightning<br/>Experience)</li> </ul> |
| <ul> <li>Report Notifications (Salesforce Classic)</li> </ul>                      |
| Tips for Scheduling Reports (Salesforce Classic)                                   |
| ■ Help   |
| Open a Report in Quip  |
| Report on Salesforce Data with Excel   |
| Export a Report  |
| ■ Help   |
| <ul> <li>Do your big reports take a long time to return data? (PDF)</li> </ul>     |
| <b>▶</b> Video   |
| Making Your Reports Run Faster (Salesforce Classic)                                |
|  |

| Share Insights with Dashboards |  |
|--------------------------------|--|
| Build Dashboards               | ■ Help   |
|                                | Build a Dashboard  |
|                                | <ul> <li>Edit and Customize Lightning Experience Dashboard<br/>Components</li> </ul> |
|                                | <ul> <li>Work with Salesforce Classic Dashboards</li> </ul>                          |
|                                | <ul> <li>Dynamic Dashboards: Choose Who People View a<br/>Dashboard As</li> </ul>    |
|                                | <ul> <li>Taking Advantage of Dynamic Dashboards (PDF)</li> </ul>                     |
|                                | <ul> <li>Tips for Creating Dashboards (PDF)</li> </ul>                               |

| Share Insights with Dashboards       |  |
|--------------------------------------|--|
|                                      | Sample CRM Dashboards (PDF)  |
|                                      | <b>▶</b> Video   |
|                                      | An Overview of Dashboards (Salesforce Classic)                                     |
| Filter Dashboards                    | ■ Help   |
|                                      | • Filter a Dashboard   |
|                                      | <ul> <li>One Dashboard For Many Viewers (PDF)</li> </ul>                           |
| Subscribe to and Schedule Dashboards | ■ Help   |
|                                      | Subscribe to or Schedule Dashboards  |
|                                      | <b>▶</b> Video   |
|                                      | <ul> <li>Subscribe to Reports and Dashboards (Lightning<br/>Experience)</li> </ul> |
| Share Dashboards                     | ■ Help   |
|                                      | <ul> <li>Report and Dashboard Folders</li> </ul>                                   |
|                                      | <b>▶</b> Video   |
|                                      | <ul> <li>Manage Report and Dashboard Folders (Lightning<br/>Experience)</li> </ul> |
| Troubleshoot Dashboards              | <b>■</b> Help  |
|                                      | Why Doesn't My Dashboard Display the Data I Expect?                                |

# Reports

Reports give you access to your Salesforce data. You can examine your Salesforce data in almost infinite combinations, display it in easy-to-understand formats, and share the resulting insights with others. Before building, reading, and sharing reports, review these reporting basics.

As you prepare to report on your Salesforce data, keep these tips in mind:

- Well-designed reports run faster.
- Before building your report, consider writing down each of the questions your report must answer. This way, your report is sure to return all the data you need.
- Reports are shared via folders. Whomever has permission to the folder your report is saved in also has access to your report. Ensure that you save your report in an appropriate folder.

Before building your first report, familiarize yourself with these features and concepts.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

#### Report Builder

The *report builder* is a visual, drag-and-drop tool which you use to create reports and edit existing ones. The report builder is where you choose a report type, report format, and the fields that make up your report.

To launch the report builder, click **New Report**.

#### **Fields**

One or more *fields* describe each report result. If you imagine that your report as a table of information, then each row is a result and each column is a field.

For example, a human resources manager creates a report about employees. Each result is an employee, and each field is a different piece of information about the employee: first name, last name, job title, start date, and so forth.

When you create or edit a report, you choose which fields you want to include in your report. To ensure your reports run quickly, it's a good idea to include only the fields that you need.

#### **Filters**

Limit the data that your report returns by using *filters*. Filters are useful for many reasons, such as focusing your report on specific data, or ensuring that your report runs quickly.

For example, say your report returns all the Cases in your company, but you only want to see Cases which are open and assigned to you. Filter the report on the Owner field and Status field.

Add filters in the Report Builder. In Lightning Experience, you can add, edit, or remove filters while reading a report, too.

#### **Report Types**

The *report type* governs which fields are available in your report. For example, File and Content reports have fields like File ID, File Name, and Total Downloads. Accounts reports have fields like Account ID, Account Name, and Phone.

The first thing you do when creating a report is choose a report type.

### **Report Format**

The *report format* specifies how your report results are laid out. Possible formats are tabular, summary, matrix, or joined. Joined reports aren't available in Lightning Experience.

## IN THIS SECTION:

## 1. Build a Report

When you have questions about your Salesforce data, like "How much revenue did we earn in the South East last quarter?", "Which lead source is generating the most closed opportunities?", or "What is the average age of all open cases?", build a report to get the answers.

#### 2. Filter Report Data

What if your report gives you more data than you need? Use filters to pare down your report until it only shows the data that you want.

#### 3. Schedule and Subscribe to Reports

Schedule and Subscribe to Reports and receive notifications that keep you informed about metrics you care most about without having to manually run reports. In Salesforce Classic, you can specify criteria that trigger report notifications.

#### 4. Export and Connect Reports to Other Tools

Export or connect a report to another tool, such as Quip, to work with report data outside of Salesforce.

## 5. Organize Reports

Keep your reports at your fingertips by sorting them into folders and deleting unused reports. If you have a lot of reports, you can use the search field to find the one you need.

## 6. Report Limits, Limitations, and Allocations

As you report on your data, be aware of these limits, limitations, and allocations.

#### 7. Troubleshoot Reports

Use these tips to help solve problems that arise when you're working with reports.

# **Build a Report**

When you have questions about your Salesforce data, like "How much revenue did we earn in the South East last quarter?", "Which lead source is generating the most closed opportunities?", or "What is the average age of all open cases?", build a report to get the answers.

#### IN THIS SECTION:

#### 1. Build a Report in Lightning Experience

Lightning report builder is a powerful and intuitive tool for analyzing your Salesforce data. Group, filter, and summarize records to answer business questions like "How much revenue did we generate from new business in California last quarter?" For a visual overview of your data, add a report chart. When finished, run your report to see full results.

#### 2. Build a Report in Salesforce Classic

Report Builder is a drag-and-drop tool for accessing your data quickly and comprehensively. Use it to set up new reports and edit existing ones.

## 3. Categorize Data with Bucket Columns

Quickly categorize report records without creating a formula or a custom field by bucketing them. When you create a bucket column, you define multiple categories (buckets) used to group report values. Like any other column in your report, you can sort, filter, and group by bucket columns.

#### 4. Evaluate Report Data with Summary Formulas

Use summary formulas to logically evaluate and do math with report results.

## 5. Combine Different Types of Information in a Joined Report

The joined report format lets you view different types of information in a single report. A joined report can contain data from multiple standard or custom report types.

#### 6. Report on Historical Changes

On top of the standard up-to-the-minute reporting on the current state of your business, you can analyze day-to-day and week-to-week changes in opportunities, cases, forecasts, and custom objects.

## 7. Report Type Reference

The report type you choose determines which records and fields appear in your report. For example, the Opportunities report type gives you access to Opportunity records and fields like Amoung, Stage and Opportunity Owner.

# **EDITIONS**

Available in: Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing

# Build a Report in Lightning Experience

Lightning report builder is a powerful and intuitive tool for analyzing your Salesforce data. Group, filter, and summarize records to answer business questions like "How much revenue did we generate from new business in California last quarter?" For a visual overview of your data, add a report chart. When finished, run your report to see full results.



**Note:** These instructions are for building reports in the Lightning report builder. To learn how to build a report using the Classic report builder, see Build a Report in Salesforce Classic in the Salesforce help.

# **EDITIONS**

Available in: Lightning Experience

Available in: Essentials, Group, Essentials, Professional, Enterprise, Performance, Unlimited, and Developer Editions

Available in: Enhanced Folder Sharing

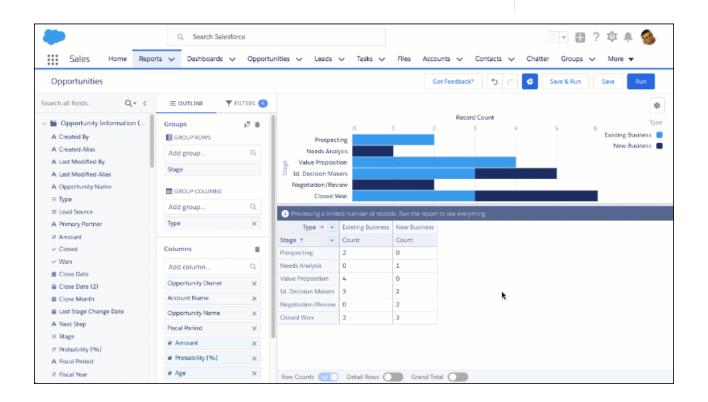
# **USER PERMISSIONS**

To create, edit, and delete reports in private folders:

 Create and Customize Reports

To create, edit, and delete reports in public and private folders:

 Report Builder OR Report Builder (Lightning Experience)



- ► Watch a video: Build a Report (Lightning Experience)
- 1. From the reports tab, click **New Report**.

If you have access to both the Lightning report builder and the Classic report builder, then you can open the Classic report builder by clicking **New Report (Salesforce Classic)**. If you have access to the Classic report builder, but not the Lightning report builder, then clicking **New Report** opens the Classic report builder.

**2.** Choose a report type, then click **Continue**.

The report type you choose determines which records are returned and which fields are available in your report.

**3.** The report opens in edit mode, and shows a preview.

In edit mode, add and remove fields to your report as columns, group rows and columns, filter report data, and show or hide a chart. Customize your report until it shows exactly the data that you need.

- 4. To add a column to your report,
  - **a.** Choose a field from the **Add column...** picklist.
  - **b.** Alternatively, expand the **Fields** pane, then drag-and-drop a field onto the Columns list or directly onto the report preview.

To remove a column from your report,

- **a.** From the Columns list, find the column you want to remove. Then click  $\times$ .
- **b.** Alternatively, from the preview pane, find the column you want to remove. Click > **Remove Column**.
- **c.** To remove all columns from your report, from the Columns list, click i.

Removing a column from your report doesn't delete the field. If you remove a column, but want it back, add it again.

- **5.** To summarize a column in your report,
  - **a.** From the preview pane, find the column you want to summarize. Click **> Summarize**.
  - **b.** Choose how you want to summarize the column: **Sum**, **Average**, **Max**, **Min**.
- **6.** To group records in your report,
  - **a.** Choose a column from the **Add group...** picklist under GROUP ROWS.

After grouping a row, you can group a column by choosing a column from the **Add group...** picklist under GROUP COLUMNS. Group up to 2 rows and 2 columns.

After grouping records by a date field, you can also customize date granularity. First select the date field you want to group your report by. Then, for **Group Date By...**, apply a calendar or fiscal period.

- **b.** Alternatively, drag-and-drop a column from the Columns list or from the preview pane onto the GROUP ROWS or GROUP COLUMNS list.
- Alternatively, from the preview pane, find the column you want to group. Click > Group Rows by This Column (or Group Columns by this Column).

After adding a group, you can show or hide detail rows, subtotals, and a grand total by toggling switches at the bottom of the preview pane.

To ungroup records in your report,

- **a.** From the Groups list, find the group you'd like to ungroup and then click  $\times$ .
- **b.** Alternatively, drag-and-drop the group onto the preview pane.

**c.** To ungroup all groups in your report, from the Groups list, click **i**.

Unless you drag-and-drop the group onto the preview pane, removing a group also removes the column from your report. If you still want to show the column, add it back.

7. To filter records from your report, click **Y FILTERS**.

Depending on which report type you chose, your report has between two and four standard filters which are applied by default. Most templates include a Show Me filter and a Date filter. The Show Me filter scopes report results around common groups, like "my opportunities" or "all opportunities". The Date filter scopes results around a date field, like "created date" or "closed date".

- **a.** To add a field filter, choose a field from the **Add filter...** picklist.
- **b.** To edit a filter, including standard filters, click the filter.
- **c.** To remove a filter, click the  $\times$  icon on the filter.

For more information about filtering reports, see Filter Report Data in the Salesforce help.

**8.** To add a chart, first add at least 1 group, then click **Add Chart**.

A chart appears. To customize the chart, click . Change the chart type, color palette, and more.

To show or hide the chart, click .

To remove the chart, click > Remove Chart.

- **9.** Click **Save**. If you're creating a brand new report, give it a name. Optionally, give it a description. With access and sharing in mind, save the report in an appropriate folder.
- **10.** To view complete report results, click **Run**.
- **Example:** Now you know how to harness your Salesforce data to answer your business questions. So, "How much revenue did we generate from new business in California last quarter?", anyways?

To find out, first create a report based on the Opportunities report type. Then, add these filters:

- Close Date range is Previous FQ.
- Billing State is California.
- Type is New Business.

Summarize the Amount column.

Finally, run the report and take note of the total.

## What's Different or Not Available in the Lightning Experience Report Builder

As you get ready to build reports with the Lightning Experience report builder, take note of how it differs from the Salesforce Classic report builder. Remember, with the appropriate user permissions, both builders are available in Lightning Experience. If a feature or tool isn't available in one builder, save your report and edit it in the other.

#### Differences Between the Lightning and Classic Report Builders

| Feature        | Difference   |
|----------------|--|
| Report Formats | In the Salesforce Classic report builder, you must choose a report format before grouping data.                          |
|                | In the Lightning report builder, the report format automatically updates as you group report data. Tabular, summary, and |

| Feature | Difference  |
|---------|---|
|         | matrix reports are all available, but you don't select the format before grouping the data.                       |
| Charts  | The Lightning Experience report builder features the same charts as the report-view-page in Lightning Experience. |

## Features Not Available in the Lightning Report Builder Beta

These features aren't available in the beta version of the Lightning report builder, but we're working hard to implement them in a future release.

Reports built in the Lightning report builder are editable in the Classic builder, and vice versa. To use unavailable features, edit a report in the Classic report builder. For example, edit a report in the Classic builder to add bucket fields.

- Joined reports—If you opt your Salesforce org into Joined reports (Beta), then you can build joined reports in the embedded Salesforce Classic report builder, but not in the Lightning report builder.
- Row Limit Filters
- Dashboard Settings Menu

# Build a Report in Salesforce Classic

Report Builder is a drag-and-drop tool for accessing your data quickly and comprehensively. Use it to set up new reports and edit existing ones.

Watch a Demo: • Getting Started with Report Builder (Salesforce Classic)

To customize an existing report using report builder, click the name of a report and click **Customize**. To optimize screen real estate, report builder uses a compressed page header. To view your application tabs, simply close the builder or click the Salesforce logo.



**Note:** These instructions are for building reports in the Classic report builder. To learn how to build a report using the Lightning report builder, see Build a Report in Lightning Experience (Beta) on page 813 in Salesforce Help.

#### IN THIS SECTION:

#### 1. Choose a Report Type

The report type you choose determines which records and fields appear in your report. For example, the Opportunities report type gives you access to Opportunity records and fields like Amount, Stage, and Type.

#### 2. Choose a Report Format

A report can use the tabular, summary, matrix, or joined format. Choose a format that's complex enough to capture the data you want to show, but simple enough to communicate it effectively.

#### 3. Group Your Report Data

Group data in columns or rows in summary, matrix, and joined reports to display meaningful information. For example, group opportunities by Close Date to see closed opportunities or group cases by product to see the number of cases for each product. You can have groupings inside groupings.

## 4. Keep Working While Your Report Preview Loads

For most actions, you can continue working on your report while the preview loads. For example, when editing a report you can drag multiple fields into the report, then create a grouping while those columns load.

#### 5. Customizing Reports

*Report builder* is a visual editor for reports. The report builder screen lets you work with report fields and filters, and shows you a preview of your report with just some of the data.

#### 6. Report Fields

The Fields pane displays fields from the selected report type, organized by folder. It also lists custom summary formulas, which you can create, edit, and delete.

## 7. Summarize Your Report Data

A summary field contains numeric values for which you want to know the sum, the average, or the highest or lowest. Summary fields show at all grouping levels. In summary and matrix reports, they also appear at the grand total level.

#### 8. Subtotal Report Results

Subtotaling your reports gives you a tool to analyze trends in the data. You can group sets of information, sort the groupings, and compare subtotals for each set against the overall total. In summary and joined reports, you can also subtotal by multiple fields to give you cascading sets of information.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To create, edit, and delete reports:

## Legacy Folder Sharing

Create and Customize Reports

AND

Report Builder

## Enhanced Folder Sharing

Create and Customize Reports

**AND** 

Report Builder

## 9. Smart Totaling in Reports

"Smart" totaling means that duplicate data is counted only once in any subtotal or total. Salesforce uses "smart" totaling when you run reports that include duplicate data in any of the columns chosen for summing or averaging.

#### 10. Save Your Report

Click **Save** to update an existing report with recent changes, or **Save As** to clone the original report without changing it. In Lightning Experience, click **Clone** to clone the report.

## 11. Show Report Data Graphically

To help readers understand your data quickly and easily, show the data in chart form. Charts appear just above the report table. They can help users get a feel for the data before they delve into the details. Use line charts to track changes over time, or a bar or pie chart to compare values at a point in time. Charts can also appear in dashboard components.

## 12. Show Report Data in Tables

To help readers scan for data easily, try hiding details and ranges, limiting the number of results shown, and highlighting with color. You can also show your table in a dashboard component.

#### SEE ALSO:

Keep Working While Your Report Preview Loads

Create a Report

Create a Report

Report Fields

Choose a Report Type

**Customizing Reports** 

Choose a Report Format

Creating a Custom Report

Combine Different Types of Information in a Joined Report

## Choose a Report Type

The report type you choose determines which records and fields appear in your report. For example, the Opportunities report type gives you access to Opportunity records and fields like Amount, Stage, and Type.

There are two types of report types: standard report types and custom report types.

Standard report types give you access to most Salesforce data. For example, the Opportunities report type gives you access to Opportunity records and fields in your report. If you're going to report on Opportunity Amounts or Probability or Type, then Opportunities is the report type is for you.

Custom report types give you access to custom objects in Salesforce, or custom views of standard objects (like Opportunities), which your administrator configures. For example, your administrator can create a custom report type which gives access to Opportunities, plus related fields from Products. With that custom report type, you can easily report on Opportunities for a given product.

- 1. From the Reports tab, click New Report.
- 2. Select the report type, and then click **Create**.



The report builder opens, granting access to records and fields based on your selected report type.

#### SEE ALSO:

Set Up a Custom Report Type
Why doesn't my report return the data I expect?

# **EDITIONS**

Available in: both Salesforce Classic and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To run reports:

Legacy Folder Sharing
Run Reports

Enhanced Folder Sharing

**Run Reports** 

To schedule reports:

Legacy Folder Sharing
Schedule Reports

Enhanced Folder Sharing

Schedule Reports

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

**AND** 

Report Builder

Enhanced Folder Sharing

> Create and Customize Reports

AND

Report Builder

## Choose a Report Format

A report can use the tabular, summary, matrix, or joined format. Choose a format that's complex enough to capture the data you want to show, but simple enough to communicate it effectively.

Choose one of the following report formats using the **Format** menu of the report builder. Tabular format is the default.

| Format  | Description   |
|---------|---|
| Tabular | Tabular reports are the simplest and fastest way to look at data. Similar to a spreadsheet, they consist simply of an ordered set of fields in columns, with each matching record listed in a row. Tabular reports are best for creating lists of records or a list with a single grand total. They can't be used to create groups of data or charts, and can't be used in dashboards unless rows are limited. Examples include contact mailing lists and activity reports.   |
| Summary | Summary reports are similar to tabular reports, but also allow users to group rows of data, view subtotals, and create charts. They can be used as the source report for dashboard components. Use this type for a report to show subtotals based on the value of a particular field or when you want to create a hierarchical list, such as all opportunities for your team, subtotaled by Stage and Owner. Summary reports with no groupings show as tabular reports on the report run page.  |
| Matrix  | Matrix reports are similar to summary reports but allow you to group and summarize data by both rows and columns. They can be used as the source report for dashboard components. Use this type for comparing related totals, especially if you have large amounts of data to summarize and you need to compare values in several different fields, or you want to look at data by date and by product, person, or geography. Matrix reports without at least one row and one column grouping show as summary reports on the report run page.  Building Matrix Reports (Salesforce Classic) |
| Joined  | Joined reports let you create multiple report blocks that provide different views of your data. Each block acts like a "sub-report," with its own fields, columns, sorting, and filtering. A joined report can even contain data from different report types.  Joined reports are available only in <b>Enterprise</b> , <b>Performance</b> , <b>Unlimited</b> , and   |
|         | <b>Developer</b> Editions.  |
|         | Introducing Joined Reports in Salesforce (Salesforce Classic)   |

# EDITIONS

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

AND

Report Builder

## Enhanced Folder Sharing

Create and Customize Reports

AND

Report Builder

Changing the Report Format

Changing the format affects filters and groupings, as follows:

| When you change              | What Happens?                          |
|------------------------------|--|
| Tabular to Summary or Matrix | The Rows to Display filter is removed. |

| When you change                       | What Happens?   |
|---------------------------------------|---|
| Summary, Matrix, or Joined to Tabular | All groupings, charts, and custom summary formulas are removed from the report. Grouping fields are not converted to columns in the tabular report. If the joined report contained multiple blocks, the columns from only the first block are included in the tabular report.       |
| Summary to Matrix                     | The first summary grouping becomes the first row grouping. The second becomes the first column grouping. The third becomes the second row grouping.   |
|                                       | If you're using the report wizard, the third summary grouping is removed.   |
| Matrix to Summary                     | The first row grouping becomes the first summary grouping. The second row grouping becomes the <i>third</i> summary grouping. The first column grouping becomes the <i>second</i> summary grouping. The second column grouping is removed.  |
|                                       | If you're using the report wizard, both the second row grouping and second column grouping are removed.   |
| Tabular, Summary, or Matrix to Joined | The existing report becomes the first block in the joined report, and the report type becomes the principle report type for the joined report.  |
|                                       | Joined report blocks are formatted as summary reports, so if you switch from a summary to a joined report, your groupings stay the same. If you switch from a matrix to a joined report, groupings are converted the same way as when you switch from a matrix to a summary report. |
|                                       | The following items aren't supported in joined reports, and aren't converted:   |
|                                       | Bucket fields   |
|                                       | Cross filters   |
|                                       | The Rows to Display filter  |

# SEE ALSO:

Build a Report in Salesforce Classic

## **Group Your Report Data**

Group data in columns or rows in summary, matrix, and joined reports to display meaningful information. For example, group opportunities by Close Date to see closed opportunities or group cases by product to see the number of cases for each product. You can have groupings inside groupings.

#### Data for Grouping

The Fields pane displays fields from the selected report type, organized by folder. Before you group data in a summary report, drag and drop at least a few fields into the preview pane.

## Add a Grouping

Add a group by dropping a field onto a drop zone.



Click **Show** > **Drop Zones** to make them visible. You can also click a column menu for a field in the report and choose **Group by this Field**.



Tip: If you group your report by a date field, you can click the group menu, select **Group Dates By**, and specify the grouping time frame: day, week, month, quarter, year, etc.

## Grouping Data in Different Report Formats

Summary and joined reports can have up to three grouping levels. Matrix reports can have two row and two column groupings. For matrix reports, you can't use the same field for both row and column groupings. For joined reports, you can use the fields from the Common Fields category in the Fields pane to group across all report blocks.

#### Remove a Grouping

To remove a group, click the group menu and choose **Remove Group**. You can also grab the group and:

- Drag it to the column bar to remove the group, but keep the field as a column in the report.
- Drag it back to the Fields pane to remove the group and the field from the report.

#### Change Order of a Grouping

Drag groups to change their order, or click the group menu and choose **Move Group Up** or **Move Group Down** for column groupings, or **Move Group Left** or **Move Group Right** for row groupings.

#### SEE ALSO:

Report Fields

**Subtotal Report Results** 

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and
Customize Reports

**AND** 

Report Builder

## Enhanced Folder Sharing

Create and Customize Reports

AND

Report Builder

# Keep Working While Your Report Preview Loads

For most actions, you can continue working on your report while the preview loads. For example, when editing a report you can drag multiple fields into the report, then create a grouping while those columns load.

The data you see in the Preview panel is real data, but it's only a subset of the data in the report, designed to show you what the report will look like when you run it. Don't worry if rows are missing or not sorted as expected in the Preview panel.



Note: For each external object in the report, your org calls out to the external system each time the preview loads. If the URL of a report callout approaches or exceeds 2 KB, your org splits the request into multiple HTTP calls, with each URL being less than 2 KB.

You can continue working in the report preview while the following actions occur:

- Add, remove, or reorder fields
- Add or remove summary fields
- Add, remove, or reorder groupings
- Remove formulas



#### Note:

- If you remove a summary field or formula used in a chart, the chart reloads, but the report preview loads asynchronously.
- Asynchronous loading isn't available for matrix and joined reports.

You can't work in the report preview while the following actions occur:

- Add or edit formulas
- Remove a report's only grouping
- Remove a column used to limit the row count for a tabular report
- Sort the report by group or column
- Update standard or custom filters
- Change report format
- Show or hide report details
- Add or remove a chart
- Add or remove conditional highlighting
- Change Group Dates By
- Change a converted currency field
- Save the report

#### SEE ALSO:

Build a Report in Salesforce Classic Report Fields

# **Customizing Reports**

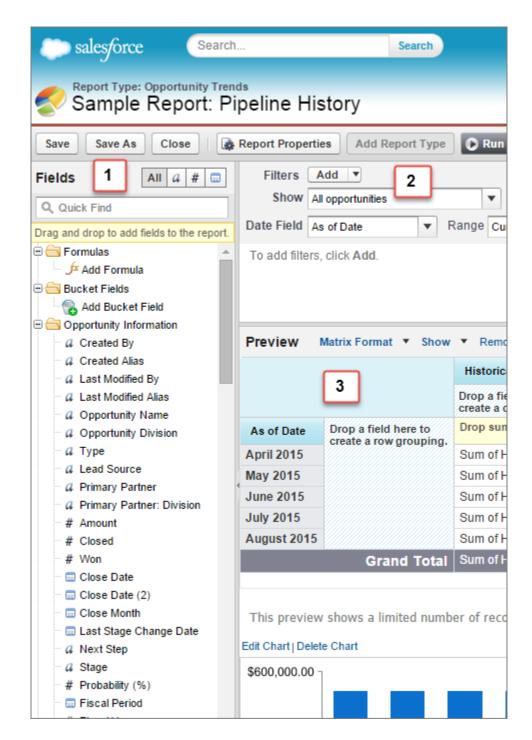
*Report builder* is a visual editor for reports. The report builder screen lets you work with report fields and filters, and shows you a preview of your report with just some of the data.

To optimize screen real estate, report builder uses a compressed page header. To view your application tabs, simply close the builder or click the Salesforce logo.

# EDITIONS

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions



#### Fields Pane (1)

The Fields pane displays fields from the selected report type, organized by folder. Find the fields you want using the Quick Find search box and field type filters, then drag them into the Preview pane to add them to the report.

Create, view, edit, and delete custom summary formulas and bucket fields in the Fields pane as well.

In the joined report format, the Fields pane displays fields from all report types added to the report, organized by report type.

#### Filters Pane (2)

Set the view, time frame, and custom filters to limit the data shown in the report.

#### Preview Pane (3)

The dynamic preview makes it easy for you to customize your report. Add, reorder, and remove columns, summary fields, formulas, groupings, and blocks. Change the report format and display options, or add a chart.

The preview shows only a limited number of records. Run the report to see all your results.

Watch a Demo: Getting Started with Report Builder (Salesforce Classic)

SEE ALSO:

Create a Report

Build a Report in Salesforce Classic

#### Report Fields

The Fields pane displays fields from the selected report type, organized by folder. It also lists custom summary formulas, which you can create, edit, and delete.

## **Adding Field Filters**

With tabular, summary, and matrix reports, you can drag a field from the Fields pane to the Filters pane to add a report filter.

#### **Finding Fields**

Find a field by typing its name into the Quick Find search box. You can also filter the list by type:

- Click at to see all field types, as well as custom summary formulas.
- Click a to see just text fields.
- Click # to see just number fields (numeric, percentage, or currency).
- Click 📵 to see just date fields.

#### Adding and Removing Fields

To add a field to a tabular, summary, or matrix report, double-click it or drag it into the Preview pane. To add a field to a joined report, drag it to the Preview pane. Press **CTRL** to select multiple fields. Drag an entire folder to add all its fields. If a tabular, summary, or matrix report already contains a field, you can't add it again. You can add the same field multiple times to a joined report as long as you add it to different blocks. In the preview pane, click **Show** > **Details** to see your report fields. While **Show** > **Details** is disabled, you can only add summary fields.

To remove a field, grab its column header and drag it back to the Fields pane. With tabular, summary, and matrix reports, you can click the column menu and choose **Remove Column**, or click **Remove All Columns**.

## Working with More than One Field

You can select multiple fields to add, remove, or reorder. For example, you can add Created By, Type and Opportunity Name to your report at the same time.

To select multiple fields or columns, press CTRL (Windows) or Command (Mac).



#### Note:

- When you add multiple fields, they appear in the report in the order selected.
- For summary and tabular formats, disable **Show** > **Details** when adding multiple summarizable fields to a report. The Summarize dialog automatically appears, letting you select summaries for all the fields at once.
- Enable Show > Details when adding non-summary fields, such as text fields to a report.
- When working with a joined report, you can select multiple fields from the Common Fields category and one report type. You can't select multiple fields from different report types.

#### **Ordering and Sorting Fields**

Reorder report columns by grabbing a column header and dragging it to a new location. Press **CTRL** to select multiple columns. To sort your report by a column, click its column header. You can also click the column menu and choose **Sort Ascending** or **Sort Descending** from the drop-down list. Sort is disabled when **Show** > **Details** isn't selected.

## **Changing the Currency Displayed**

If your organization has enabled multiple currencies, you can change the currency shown for all currency fields. Click **Show** > **Display Currencies Using**, then select an active currency to display.

SEE ALSO:

Evaluate Report Data with Summary Formulas Group Your Report Data Summarize Your Report Data Highlight Data Ranges

## Summarize Your Report Data

A summary field contains numeric values for which you want to know the sum, the average, or the highest or lowest. Summary fields show at all grouping levels. In summary and matrix reports, they also appear at the grand total level.

The Fields pane displays fields from the selected report type, organized by folder.

A summary is the Sum, Average, Max, or Min for a number field. (Use the # filter to find them faster.)

To add a summary field:

- Double-click a number field in the Fields pane.
- Drag a number field into the preview. Press CTRL to select multiple fields. For matrix reports, there are drop zones before, between, and after sets of summaries. For example, the sum, average, max, and min of Annual Revenue are a set, and you can't drop a new summary field between them.
- Choose **Summarize this Field** in the column menu for a field already in the report.

To change an existing summary field, or add other summaries on that same field, click next to the summary field and choose **Summarize this Field**.

To remove a summary field:

- Click its menu and choose Summarize this Field and deselect all options.
- Click its menu and choose Remove Summary.
- Drag the summary set back to the Fields pane. Note that all summaries for that field are removed.
   Press CTRL to select multiple summary fields.

Reorder sets of summary fields in matrix reports by dragging them. The summaries for each field move together when dragged. For example, if your report contains the sum and average of Annual Revenue, and the max and min of Probability, you can drag the Probability

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and
Customize Reports

**AND** 

Report Builder

## Enhanced Folder Sharing

Create and
Customize Reports

**AND** 

summaries before or after the Annual Revenue summaries, but not between. Summaries can't be placed after custom summary formulas or Record Count.

SEE ALSO:

Report Fields

**Subtotal Report Results** 

## **Subtotal Report Results**

Subtotaling your reports gives you a tool to analyze trends in the data. You can group sets of information, sort the groupings, and compare subtotals for each set against the overall total. In summary and joined reports, you can also subtotal by multiple fields to give you cascading sets of information.

For example, if you subtotal a summary report by Opportunity Owner, the report groups the accounts by Opportunity Owner, lists the number of opportunities owned by each user, and shows subtotals by Opportunity Owner for all the columns in the report. You could further subtotal each user's opportunities by product.

- 1. Click **Customize** or **Edit** from any report.
- 2. In the report builder, add a summary field to the report.

  Summaries show up at grouping levels as well as for individual rows.

SEE ALSO:

Add a Summary Formula Column to a Report Build a Report in Salesforce Classic Subtotal Report Results

#### **Smart Totaling in Reports**

"Smart" totaling means that duplicate data is counted only once in any subtotal or total. Salesforce uses "smart" totaling when you run reports that include duplicate data in any of the columns chosen for summing or averaging.

For example, suppose an opportunity has two products, and you run the Opportunity Product Report with the total opportunity amount selected as a column to sum by. The amount appears twice in the details of the report, once for each product on the opportunity.

In this case, "smart" totaling correctly calculates any subtotals, grand totals, and averages, adding that opportunity amount only once.



**Note:** For dashboard components, "smart" totaling isn't used. For example, in a dashboard table, the total displayed is simply the sum of the values listed in the table.

SEE ALSO:

Subtotal Report Results
Subtotal Report Results

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To subtotal report results:

Legacy Folder Sharing
Create and
Customize Reports

AND

Report Builder

Enhanced Folder Sharing

Create and Customize Reports

AND

#### Save Your Report

Click **Save** to update an existing report with recent changes, or **Save As** to clone the original report without changing it. In Lightning Experience, click **Clone** to clone the report.

- 1. Verify the name, description, and folder, then choose where to go next:
  - Click **Save** to save the report and go to the Reports home page
  - Click **Save & Return to Report** to save it and go back to the report run page.
  - Note: To save your report at a specific role hierarchy drill-down level on sales, forecast, opportunity, and activity reports, select Save Hierarchy Level.
- Tip: If you add a colon to your report name, it displays in two separate lines when you view the report. Use this to categorize reports by name, or better display long names. For example, if you enter First Line: Second Line for Report Name, you'll see this on the run page:



# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

**Legacy Folder Sharing**Schedule Reports

Enhanced Folder Sharing Schedule Reports

#### **Show Report Data Graphically**

To help readers understand your data quickly and easily, show the data in chart form. Charts appear just above the report table. They can help users get a feel for the data before they delve into the details. Use line charts to track changes over time, or a bar or pie chart to compare values at a point in time. Charts can also appear in dashboard components.

#### IN THIS SECTION:

1. Add a Chart to a Report

Add a chart to give users a visual way to understand the data in your report.

2. Chart Properties

You can add a chart to any standard or custom summary or matrix report. The chart properties specify the data that appears in the chart, its labels and colors, and any conditional highlighting you apply.

3. Present Data Effectively with Charts

When you add a chart to a report, things like negative values, very large or small numbers, custom summary formulas, and field-level security can affect the charts' appearance. Switching the report format and changing groupings and blocks also affects charts.

4. Show Different Data Sets in One Chart

A *combination chart* plots multiple sets of data on a single chart. Each set of data is based on a different field, so values are easy to compare. You can also combine certain chart types to present data in different ways in a single chart.

#### 5. Combination Chart Examples

Use a combination chart to show multiple values against a single axis range, show two chart types together, or compare two continuous summary values.

6. Chart Formatting Options

#### SEE ALSO:

Present Data Effectively with Charts

Add a Chart to a Report

**Chart Properties** 

**Combination Chart Examples** 

Show Different Data Sets in One Chart

#### Add a Chart to a Report

Add a chart to give users a visual way to understand the data in your report.



Note: Your report must have at least one grouping before you can add a chart.

In Lightning Experience, add or edit a chart from the Report Run Page.

- 1. To show or hide the chart, click .
- **2.** To edit the chart, click .

From the chart editor, change chart type, give the chart a title, change axes, show or hide a reference line, and show or hide chart values.

In Salesforce Classic, add or edit a chart from the Report Builder.

- 1. Click **Add Chart** in report builder. For existing charts, click **Edit Chart**.
- 2. Select a chart type.
- **3.** Enter the appropriate settings on the Chart Data tab for the chart type you selected.
- **4.** Enter the appropriate settings on the Formatting tab.
- 5. Click OK.

#### SEE ALSO:

**Chart Types** 

Present Data Effectively with Charts

Build a Report in Salesforce Classic

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Group, Professional, Enterprise, Performance, Unlimited, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

**Legacy Folder Sharing** 

Create and **Customize Reports** 

**AND** 

Report Builder

### **Enhanced Folder Sharina**

Create and **Customize Reports** 

AND

#### **Chart Properties**

You can add a chart to any standard or custom summary or matrix report. The chart properties specify the data that appears in the chart, its labels and colors, and any conditional highlighting you apply.



**Note**: This topic only applies if you're not using report builder. *Report builder* is a visual editor for reports.

To customize chart properties, click **Add Chart** or **Edit Chart** in any matrix or summary report, and use the fields on the Chart Data and Formatting tabs.

See Present Data Effectively with Charts on page 833 for limits, considerations, and tips.

### **Chart Data Settings**

Control the data that appears in your chart with these options.

| Field             | Description   |
|-------------------|---|
| Chart Type        | Select the type of chart to use when representing the data in your report. The chart type that you choose determines which chart properties are available to set.   |
| X-Axis and Y-Axis | Choose what values to display on the axes of your chart. Depending on the chart type, axis values can be record count, summary fields, or groupings defined in the report.  |
|                   | Note: If the Y-axis corresponds to a custom summary formula that has the Where Will this Formula Be Displayed? option set to a grouping level other than All summary levels, then the X-axis and Groupings selection must correspond to that custom summary formula's grouping level.           |
| Combination Chart | Select this option to plot additional values on this chart. The chart type you chose must allow combination charts.   |
| Groupings         | Choose how to group information on your chart. You can only pick from groupings defined in the report. For bar and column charts, click an icon to select the grouping display: side-by-side, stacked, or stacked to 100%. For either single or grouped line charts, you can select Cumulative. |
| Values            | Choose what to display as values for your pie, donut, or funnel chart.  |
| Wedges            | Choose what to display as wedges for your pie or donut chart.   |
| Segments          | Choose what to display as segments for your funnel chart.   |

## **Chart Presentation**

Control the appearance and behavior of your chart using these options.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

AND

Report Builder

# Enhanced Folder Sharing

Create and Customize Reports

AND

| Field                              | Description  |
|------------------------------------|--|
| Chart Title                        | Enter a name for the chart.  |
| Title Color                        | Select the color for the text of your chart title.   |
| Title Size                         | Select the font size for the text of your chart title. The maximum size is 18. Larger values are shown at 18 points.   |
| Text Color                         | Select a color for all the text and labels in your chart.  |
| Text Size                          | Select a font size for all the text and labels in your chart. The maximum size is 18. Larger values are shown at 18 points.  |
| Background Fade                    | Choose a direction for a gradient color background. Also select a Start Color and End Color for the gradient. Use white for both if you do not want a background design.   |
| Legend Position                    | Choose a place to display the legend in relation to your chart.  |
| Combine Small Groups into "Others" | Combine all groups less than or equal to 3% of the total into a single "Others" wedge or segment. Deselect to show all values individually on the chart. This only applies to pie, donut, and funnel charts. This option is on by default for pie and donut charts, and off for funnel.                            |
| X- or Y-Axis Range                 | Choose a manual or automatic axis range for bar, line, or column charts. If you choose manual, enter numbers for the minimum and maximum axis values to be displayed. If there are data points outside the range that you set, the axis automatically extends to include those values when you generate the chart. |
| Show Axis Labels                   | Display labels for each axis of your chart. This only applies to bar and line charts.  |
| Show Labels                        | Display labels for your pie, donut, or funnel chart.   |
| Show Group %                       | Display the percentage value for each group in the chart.  |
| Show X- or Y-Axis<br>Values        | Display the values of individual records or groups on the chart axis. This only applies to certain horizontal bar and vertical column charts.  |
| Show Values                        | Display the values of individual records or groups on the chart. This only applies to certain chart types.   |
| Show Wedge %                       | Display the percentage value for each wedge of pie and donut charts.   |
| Show Total                         | Display the total value for the donut chart.   |
| Show Segment %                     | Display the percentage value for each segment of funnel charts.  |
| Show Details on<br>Hover           | Display values, labels, and percentages when hovering over charts. Hover details depend on chart type. Percentages apply to pie, donut, and funnel charts only. Hover is disabled when viewing charts that have more than 200 data points.   |
| Chart Size                         | Select a size for the chart, from Tiny to Extra Large.   |
| Chart Position                     | Place the chart above or below your report.  |

# **Conditional Highlighting**

Highlight field values on summary or matrix reports based on ranges and colors you specify. To enable conditional highlighting, your report must contain at least one summary field or custom summary formula.

| Field           | Description  |
|-----------------|--|
| Summary         | Choose a summary field whose number ranges you want represented by colors.   |
| Low Color       | Select a color to represent data that falls below the Low Breakpoint value.  |
| Low Breakpoint  | The number that acts as the threshold between the Low Color and the Mid Color. Values that are exactly the same as the Low Breakpoint value are shown as the Mid Color.    |
| Mid Color       | Select a color to represent data that falls between the Low Breakpoint and High Breakpoint values.   |
| High Breakpoint | The number that acts as the threshold between the Mid Color and the High Color. Values that are exactly the same as the High Breakpoint value are shown as the High Color. |
| High Color      | Select a color to represent data that falls above the High Breakpoint value.   |

#### SEE ALSO:

**Chart Types** 

**Customizing Reports** 

#### Present Data Effectively with Charts

When you add a chart to a report, things like negative values, very large or small numbers, custom summary formulas, and field-level security can affect the charts' appearance. Switching the report format and changing groupings and blocks also affects charts.

- You can't have more than 250 groups or 4,000 values in a chart. If you see an error message saying that your chart has too many groups or values to plot, adjust the report filters to reduce the number. In combination charts, all groups and values count against the total.
- If you lose access to a field used in a chart, another field may be used in its place. If no other fields are available, record count is used.
- Decimal-place precision on charts is not customizable. Numeric and currency values round to two decimal places. Percentage values round to one decimal place.
- If numeric values are too large or too small, they are shown in scientific notation. For example, the number 5,750,000,000 is displayed as 5.75E9; -0.0000000061 is displayed as -6.1E-9.
- Negative values are displayed on all line charts and bar and column charts. Negative values on
  pie, donut, and funnel charts are not displayed. Groupings containing negative values are
  displayed in the legend, and negative values are reflected in the calculation of all summary
  values, including the total for donut charts.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

- When creating charts, don't group by a field on a child object then sum by a field on the parent object. It's not good practice. If you do this with a donut chart, the total shown may not match the sum of the wedges.
- In Salesforce Classic, dashboard and report charts that display values from summary formulas display decimal places using your default currency setting instead of what you specified for the formula. For example, if the summary formula specifies zero decimal places, no decimal places appear in columns, but chart values show the number of decimal places specified for your default currency (usually two decimal places). This applies to currencies, numbers, and percentages.
- With joined reports, summary field names contain both the field name and the block name. For example, if you've summarized the Amount field in Block 1, it appears as Block 1 Sum of Amount in the Chart Editor. A cross-block or standard custom summary formula contains the block name when the formula is included in multiple blocks.

• When a report already has a chart, changing the report format or removing blocks, groupings, or summary fields has impacts described in this table.

| When you make this change   | The effect is   |
|---|---|
| Switch format from summary, matrix, or joined to tabular                              | All charts are removed from the report.   |
| Switch format from summary to matrix  | The first summary grouping becomes the first row grouping. The second becomes the first column grouping. The third becomes the second row grouping. The chart is unchanged.   |
| Switch format from matrix to summary  | The first row grouping becomes the first summary grouping. The second row grouping becomes the <i>third</i> summary grouping. The first column grouping becomes the <i>second</i> summary grouping. The second column grouping is removed. If the chart used the second column grouping, that grouping is replaced by the first available summary field that's not already used in the chart. |
| Switch format from summary or matrix to   | The existing report becomes the first block and the chart remains in the report.  |
| joined  | If the matrix report used the second column grouping, that grouping is replaced by the first available summary field that's not already used in the chart.  |
|   | If the summary or matrix report included a grouping from a bucket field, the grouping is replaced with the next available grouping not already used in the chart.   |
| Switch format from joined to summary or matrix  | The first block becomes the report, and groupings and the chart are preserved. If the chart in the joined version contained summary fields from the first block, they remain in the chart in the summary report. Summaries from other blocks are removed from the chart.  |
| Remove a block containing a summary field from a joined report                        | The summary field is replaced with the next available summary field. If no additional summary fields are available, the original field is replaced with the record count from the first remaining block. Removing all blocks from a report removes the chart completely.  |
| Remove a grouping used in the chart   | The grouping is replaced with the next available grouping. If all groupings are removed, the chart is removed as well. Note that groupings can be removed automatically when you add a report type to a joined report or if a field becomes unavailable, for example as a result of field-level security.   |
| Remove a summary field used in the chart (including custom and cross-block summaries) | The summary field is replaced with the next available summary field. If no additional summary fields are available, the field is replaced with the record count for either the report or the first block. Note that summary fields can be removed automatically, for example as a result of field-level security or when the report format changes.   |

## SEE ALSO:

Add a Chart to a Report Chart Formatting Options Show Different Data Sets in One Chart

Show Different Data Sets in One Chart

A *combination chart* plots multiple sets of data on a single chart. Each set of data is based on a different field, so values are easy to compare. You can also combine certain chart types to present data in different ways in a single chart.

With combination charts, you can:

- Add a line to an existing line, vertical column, grouped vertical column, or stacked vertical column chart.
- Add a cumulative line to an existing line cumulative chart.
- Add up to three more columns to a vertical column chart.
- Add up to three more bars to a horizontal bar chart.

For example, as a sales manager, you wish to see "Pipeline amount" as a line and "Number of open deals" as vertical bars on the same chart.

- 1. Edit the chart for any summary or matrix report, or edit a dashboard component that displays a summary or matrix report.
- **2.** Choose a chart type that allows combination charts:
  - Bar chart
  - Column chart
  - Grouped column chart
  - Stacked column chart
  - Line chart
  - Cumulative line chart
- 3. Select the **Plot additional values** checkbox. The chart preview updates as you configure your combination chart.
- 4. To plot on the chart, select a Value.
- **5.** Choose a Display option. Available options differ based on your chart type and whether you're editing a chart or a dashboard component.
  - For columns or bars, click Add Bar or Add Column links to add up to three sets.
  - When adding a line to a vertical column chart, select **Use second axis** to show a separate axis for the added line on the right side of the column chart. A separate axis can be useful when the two values have different ranges or units.



**6.** Once you've set up your report, click **Run Report** or **Save**.

# Mote:

- If you lose access to a field used in a chart, another field may be used in its place. If no other fields are available, record count is used.
- Both X-Axis and Y-Axis must not be set to Auto. If set to Auto, you can't plot the chart.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing
Create and

AND

Report Builder

**Customize Reports** 

## Enhanced Folder Sharing

Create and Customize Reports

AND

Filtered drill-down doesn't work for combination charts in dashboards.

#### SEE ALSO:

**Chart Types** 

Add a Chart to a Report

**Combination Chart Examples** 

## Combination Chart Examples

Use a combination chart to show multiple values against a single axis range, show two chart types together, or compare two continuous summary values.

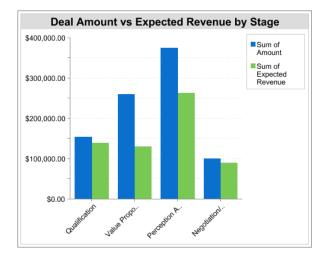
A combination chart plots multiple sets of data on a single chart.

#### Column-on-Column

Add columns to a column chart to show multiple values against a single axis range.

To create the chart in this example, choose the Vertical Column chart type, set the opportunity sum of amount as the Y-Axis, stage as the X-Axis, and use the **Plot additional values** option to add the sum of expected revenue as a column.

You can quickly compare the actual values against the expected values for each stage.

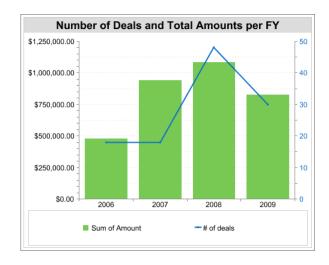


#### Line-on-Column

Add a line to a column chart to show two chart types together. Using a second axis allows you to add different types of values to the chart.

To create the chart in this example, choose the Vertical Column chart type, set the opportunity sum of amount as the Y-Axis, fiscal year as the X-Axis, and use the **Plot additional values** option to add the number of deals as a line. Summary values of different types won't be available in the Values drop-down list unless you select **Use second axis**.

You can see both the total amount and number of deals for each year on a single chart.

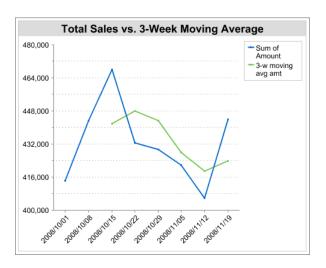


#### Line-on-Line

Add a line to a line chart to compare two continuous summary values.

To create the chart in this example, set up a custom summary formula to calculate a three-week moving average of opportunity amounts, then choose the Line chart type, set the opportunity sum of amount as the Y-Axis, date as the X-Axis, and use the **Plot additional values** option to add the calculated three-week moving average as a line.

You can compare sales against the moving average over time.



The custom summary formula used in this example is shown here:

```
(OppProductTrends__c.Amount__c:SUM+ PREVGROUPVAL(OppProductTrends__c.Amount__c:SUM, OppProductTrends__c.as_of_date__c) + PREVGROUPVAL(OppProductTrends__c.Amount__c:SUM, OppProductTrends__c.as_of_date__c,2))/3
```

SEE ALSO:

Show Different Data Sets in One Chart

**Chart Formatting Options** 

Control the appearance and behavior of your chart using these options.

| Field                              | Description  |
|------------------------------------|--|
| Chart Title                        | Enter a name for the chart.  |
| Title Color                        | Select the color for the text of your chart title.   |
| Title Size                         | Select the font size for the text of your chart title. The maximum size is 18. Larger values are shown at 18 points.   |
| Text Color                         | Select a color for all the text and labels in your chart.  |
| Text Size                          | Select a font size for all the text and labels in your chart. The maximum size is 18. Larger values are shown at 18 points.  |
| Background Fade                    | Choose a direction for a gradient color background. Also select a Start Color and End Color for the gradient. Use white for both if you do not want a background design.   |
| Legend Position                    | Choose a place to display the legend in relation to your chart.  |
| Combine Small Groups into "Others" | Combine all groups less than or equal to 3% of the total into a single "Others" wedge or segment. Deselect to show all values individually on the chart. This only applies to pie, donut, and funnel charts. This option is on by default for pie and donut charts, and off for funnel.                            |
| X- or Y-Axis Range                 | Choose a manual or automatic axis range for bar, line, or column charts. If you choose manual, enter numbers for the minimum and maximum axis values to be displayed. If there are data points outside the range that you set, the axis automatically extends to include those values when you generate the chart. |
| Show Axis Labels                   | Display labels for each axis of your chart. This only applies to bar and line charts.  |
| Show Labels                        | Display labels for your pie, donut, or funnel chart.   |
| Show Group %                       | Display the percentage value for each group in the chart.  |
| Show X- or Y-Axis<br>Values        | Display the values of individual records or groups on the chart axis. This only applies to certain horizontal bar and vertical column charts.  |
| Show Values                        | Display the values of individual records or groups on the chart. This only applies to certain chart types.   |
| Show Wedge %                       | Display the percentage value for each wedge of pie and donut charts.   |
| Show Total                         | Display the total value for the donut chart.   |
| Show Segment %                     | Display the percentage value for each segment of funnel charts.  |
| Show Details on<br>Hover           | Display values, labels, and percentages when hovering over charts. Hover details depend on chart type. Percentages apply to pie, donut, and funnel charts only. Hover is disabled when viewing charts that have more than 200 data points.   |
| Chart Size                         | Select a size for the chart, from Tiny to Extra Large.   |
| Chart Position                     | Place the chart above or below your report.  |

## SEE ALSO:

Add a Chart to a Report

#### **Show Report Data in Tables**

To help readers scan for data easily, try hiding details and ranges, limiting the number of results shown, and highlighting with color. You can also show your table in a dashboard component.

#### IN THIS SECTION:

#### 1. Show and Hide Report Details

You can show or hide report details from either the run reports page or the report builder. When you hide details, individual records don't display in the report. Groupings, summary formulas, and record counts remain visible.

#### 2. Highlight Data Ranges

Highlight field values on summary or matrix reports based on ranges and colors you specify. To enable conditional highlighting, your report must contain at least one summary field or custom summary formula.

#### 3. Use a Tabular Report in a Dashboard

You can use a tabular report as the source report for a dashboard table or chart component, if you limit the number of rows it returns.

#### 4. Limit Report Results

Set limits to the scope of your report to avoid processing too many records. The built-in choices for limiting your results vary according to the object you are reporting on.

#### SEE ALSO:

Highlight Data Ranges
Limit Report Results
Show and Hide Report Details
Use a Tabular Report in a Dashboard

Show and Hide Report Details

You can show or hide report details from either the run reports page or the report builder. When you hide details, individual records don't display in the report. Groupings, summary formulas, and record counts remain visible.

- From the run reports page, click **Hide Details** to hide individual records. Click **Show Details** to show all records.
- From the report builder, click Show > Details. A check mark beside the Details menu item
  means that details are displayed. Click Details to toggle between showing or hiding records.

#### SEE ALSO:

Show and Hide the Record Count for a Block
Build a Report in Salesforce Classic
Combine Different Types of Information in a Joined Report

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: Group, Essentials, Professional, Enterprise, Performance, Unlimited, and Developer Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To run reports:

Legacy Folder Sharing
Run Reports

Enhanced Folder Sharing

**Run Reports** 

To create, edit, and delete reports:

Legacy Folder Sharing

Create and
Customize Reports

AND

Report Builder

Enhanced Folder Sharing

Create and Customize Reports

AND

#### Highlight Data Ranges

Highlight field values on summary or matrix reports based on ranges and colors you specify. To enable conditional highlighting, your report must contain at least one summary field or custom summary formula.



**Note:** You can configure conditional highlighting in Lightning Experience using the Salesforce Classic report builder, but not using the Lightning Experience report builder. Though configurable, conditional highlighting doesn't display on reports in Lightning Experience.



**Note**: You cannot edit a report Lightning Experience after configuring conditional highlighting.

To set conditional highlighting, click **Show** > **Conditional Highlighting** in report builder, then set the breakpoint values and their range colors as follows:

| Field              | Description  |
|--------------------|--|
| Summary            | Choose a summary field whose number ranges you want represented by colors.   |
| Low Color          | Select a color to represent data that falls below the Low Breakpoint value.  |
| Low<br>Breakpoint  | The number that acts as the threshold between the Low Color and the Mid Color. Values that are exactly the same as the Low Breakpoint value are shown as the Mid Color.    |
| Mid Color          | Select a color to represent data that falls between the Low Breakpoint and High Breakpoint values.   |
| High<br>Breakpoint | The number that acts as the threshold between the Mid Color and the High Color. Values that are exactly the same as the High Breakpoint value are shown as the High Color. |
| High Color         | Select a color to represent data that falls above the ${\tt High\ Breakpoint}$ value.  |

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing
Create and

AND

Report Builder

**Customize Reports** 

# Enhanced Folder Sharing

Create and Customize Reports

AND

Report Builder

#### SEE ALSO:

Build a Report in Salesforce Classic

Use a Tabular Report in a Dashboard

You can use a tabular report as the source report for a dashboard table or chart component, if you limit the number of rows it returns.

#### 1. Click Add > Row Limit.

- **2.** Set the Row Limit to 10, 25, or Custom. If you choose custom enter a number between one and 99.
- **3.** Set the Sort By and sort order options. If you chose **Limit Rows by this Field** for a column, these options are already set.
- 4. Click OK.
- **5.** Click **Dashboard Settings** in the toolbar.
- **6.** Choose a Name and Value to use in dashboard tables and charts. Tables show both name and value. Charts are grouped by name.
- 7. Click **OK**. You can now use this tabular report as the source report for a dashboard component.



# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Group, Essentials, Professional, Enterprise, Performance, Unlimited, and Developer Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

**AND** 

Report Builder

# Enhanced Folder Sharing

Create and Customize Reports

AND

Limit Report Results

Set limits to the scope of your report to avoid processing too many records. The built-in choices for limiting your results vary according to the object you are reporting on.

• To see a collapsed view of a report showing only the headings, subtotals, and total in report builder, deselect **Show** > **Details**.

On the report run page, click **Hide Details** or **Show Details** at the top of the report.

- To filter by a field, click **Add** > **Field Filter**. With tabular, summary, and matrix reports, you can drag a field from the Fields pane to the Filters pane to add a report filter.
- As you create and work with cross filters, take note of these considerations and limits. To add one, click Add > Cross Filter.
- In Professional, Enterprise, Unlimited, Performance, and Developer edition organizations, the **Hierarchy** links let you browse report results based on the role or territory hierarchies.
- If your organization uses divisions to segment data and you have the "Affected by Divisions" permission, use the Division drop-down list to include records in just one division or all divisions. Select Current to show records in your current working division. Reports that are already scoped (such as My Cases or My team's accounts) include records in all divisions, and you can't further limit them to a specific division. If you do not have the "Affected by Divisions" permission, your reports include records in all divisions.
- You can set the maximum number of records to display in a tabular report by clicking Add >
   Row Limit in report builder. Set the number of rows, then choose a field to sort by, and the
   sort order. Limiting rows on a tabular report allows you to use it as a source report for dashboard
   table and chart components.

The Row Limit option on tabular reports shows only fields from the primary object on reports created from custom report types where object A may or may not have object B. For example, in an accounts with or without contacts report, only fields from accounts are shown. Fields from objects after a may-or-may-not association on custom report types aren't shown. For example, in an accounts with contacts with or without cases report, only fields from accounts and contacts are available to use. If you change the report format, **Row Limit** settings are lost.

Note: Only the first 255 characters in a custom text field count for filtering purposes. For example, if you add a field filter to find opportunities where the custom text field <code>Customernotes</code> includes the word "phone," but "phone" appears after the 255th character in the field, the filter will not find that record. In standard text fields, all characters count, regardless of the length of the field.

SEE ALSO:

Filter Across Objects with Cross Filters

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

**AND** 

Report Builder

# Enhanced Folder Sharing

Create and Customize Reports

AND

## Categorize Data with Bucket Columns

Quickly categorize report records without creating a formula or a custom field by bucketing them. When you create a bucket column, you define multiple categories (buckets) used to group report values. Like any other column in your report, you can sort, filter, and group by bucket columns.

Watch a Demo: Getting Started with Buckets (Salesforce Classic)

For example, get a view of your accounts based on how many employees they have. Create a bucket column named Size based on the # Employees field. Then, create buckets that group records into Small, Medium, and Large ranges that you define. Small includes accounts with 5,000 or less employees. Medium includes accounts with 5,000 to 10,000 employees. Large includes accounts with more than 10,000 employees. Now you can sort, filter, or group records based on how they're grouped in buckets. If one account grows or shrinks, it'll automatically switch buckets.

#### IN THIS SECTION:

Add a Bucket Column
 Create a bucket column while editing a report.

2. Edit a Bucket Column

When it's time to add, remove, or change buckets in a bucket column, edit it.

3. Delete a Bucket Column

When you no longer need a bucket column, delete it.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

### **USER PERMISSIONS**

To add, edit, or delete a bucket column in private reports:

Legacy Folder Sharing
Create and
Customize Reports

## Enhanced Folder Sharing

Create and Customize Reports

To add, edit, or delete a bucket column in public and private reports:

Legacy Folder Sharing

Report Builder

## Enhanced Folder Sharing

Report Builder OR Report Builder (Lightning Experience)

## Add a Bucket Column

Create a bucket column while editing a report.

# EDITIONS

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# USER PERMISSIONS

To add, edit, or delete a bucket column in private reports:

Legacy Folder Sharing
Create and
Customize Reports

## Enhanced Folder Sharing

Create and
Customize Reports

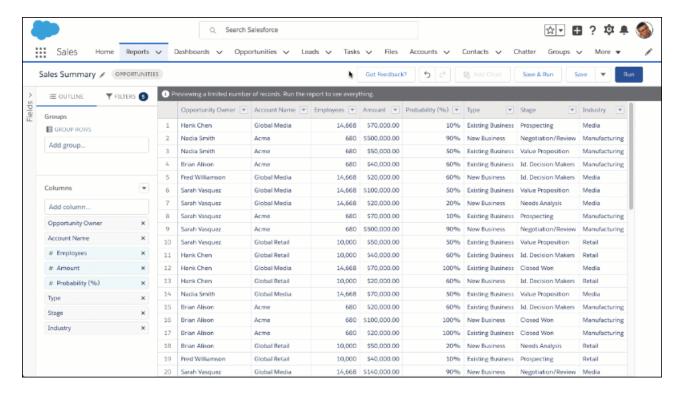
To add, edit, or delete a bucket column in public and private reports:

Legacy Folder Sharing

Report Builder

## Enhanced Folder Sharing

Report Builder OR Report Builder (Lightning Experience)



- 1. Edit a report.
- 2. Find the column you want to bucket in the report preview, then click > Bucket This Column.

Alternatively, from the Columns section, click > Add Bucket Column.

The Edit Bucket Column menu opens.

- **3.** From **Field**, choose a field from the report type. The bucket column is based on the field you choose. If you started bucketing a column in the report preview, then the field is already set.
- **4.** From **Bucket Name**, enter a name for the bucket column.
- **5.** Add buckets and choose values for each bucket.

Depending on the data type of the column you're bucketing, you see different bucket options in the Edit Bucket Column menu. You can bucket 3 data types: numeric, picklist, and text.

#### Numeric

A numeric bucket helps you sort data that can be described in terms of numbers. Numeric buckets include columns with field types like currency (Amount), number (Number of Employees), and percent (Probability), but not necessarily mixed alphanumeric field types like auto number. Alphanumeric values don't reside on the number line, which means they can't get numerically evaluated, which prevents them from getting bucketed in a numeric bucket. Alphanumeric values can be included in text buckets.

Each numeric bucket includes a range and a name.

To gain insight into your deals, use bucketing to group by deal size instead of looking at individual deals. For example, create 3 buckets based on deal size: Small, Medium, and Large. Small holds deals worth \$1,000 or less. Medium holds deals worth between \$1,000 and \$25,000 dollars. Large holds deals worth more than \$25,000.

**a.** To create a numeric bucket, click **Add**. Each numeric bucket consists of a range and a name.

**b.** From **RANGE**, enter the lower-bound and upper-bound breakpoints for ranges. The first number entered buckets values equal to or less than the number you enter. Each subsequent number you enter buckets values greater than the prior number you enter. The last number entered buckets values greater than the number you enter.

- c. From **BUCKET**, enter a name for the bucket.
- **d.** Optionally, to move all empty or null values to the bucket that contains the value zero, select **Treat empty values in the report as zeroes**. If deselected, unbucketed values appear as a dash (-).

#### **Picklist**

A picklist bucket contains items that can be selected from a list.

To get a generalized view of your accounts, bucket them by industry. Create buckets with industry names like Manufacturing, Technology, and Media. Then, add accounts into the bucket that best represents their operation.

- **a.** To create a picklist bucket, click **Add Bucket**. Then, give the new bucket a name.
- **b.** To put values in a bucket, select the values you want to move, then click **Move To** and select bucket you want to move them into. To move values into a new bucket, click **Move To** > **New Bucket**, enter a name for the new bucket.
- **c.** To take values out of a bucket, click **Move To** > **Unbucketed Values**. Unbucketed values appear in the bucket column as they would in a normal report column. You can put them all into a bucket named Other by enabling **Bucket remaining values as Other**.
- **d.** To rename a bucket, click . To delete a bucket, click .

#### Text

At first glance, text buckets seem to have the same options as picklist buckets. Values of the text column appear as though they were values in a picklist, and you can add them into buckets in much the same way.

Unlike picklist fields, text fields feature the **Enter Values** button. If you know which value you want to bucket, you can use the Enter Values function to quickly bucket it without searching. Entering values is useful if your report has a large number (such as millions) of values and searching for a value is slow. You can also use this method to enter and bucket values that will appear in the report later.

#### 6. Click Apply.

#### 7. Click Save.

The bucket column appears in the report preview and in the Columns section. Like any other column in the report, you can sort, filter, and group by the bucket column.

To edit the bucket column, find the column in the report preview and click > Edit Bucket Column. To delete the bucket column, click > Delete Bucket Column.

As you prepare to add bucket columns to your report, take note of these limitations:

- Each report can include up to 5 bucket fields.
- Each bucket field can contain up to 20 buckets.
- Each bucket can contain up to 20 values.
- Bucket columns are available for use only in the report where they're generated. To use a bucket in multiple reports, create the bucket column for each report. Or create a separate formula field for the object that's dependent on the bucket.
- Buckets and bucket fields aren't available for reports that include external objects.
- If a bucket column's source column has a custom index, and you filter by the bucket column, then the custom index performance gains are lost.

#### Edit a Bucket Column

When it's time to add, remove, or change buckets in a bucket column, edit it.

- 1. Edit the report.
- 2. In Lightning Experience, from the report preview, click > Edit Bucket Column.
  In Salesforce Classic, from the Fields pane under Bucket Fields, hover over a bucket field and click Or in the Preview pane, click the bucket field column menu and select Edit Bucket Field.

The Edit Bucket Column menu opens.

- **3.** Add, remove, or change buckets and bucket values.
- 4. Click Apply.
- 5. Click Save.

For more information about the Edit Bucket Column menu, see Add a Bucket Column in Salesforce Help.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To add, edit, or delete a bucket column in private reports:

Legacy Folder Sharing
Create and
Customize Reports

## Enhanced Folder Sharing

Create and
Customize Reports

To add, edit, or delete a bucket column in public and private reports:

Legacy Folder Sharing

Report Builder

# Enhanced Folder Sharing

Report Builder OR Report Builder (Lightning Experience)

#### Delete a Bucket Column

When you no longer need a bucket column, delete it.

Deleting a bucket column does not affect the source fields. Deleting a bucket column from the report preview also deletes it from the Columns section. If you accidentally delete a bucket column and need to retrieve it, undo the delete action.

- 1. Edit the report.
- 2. From the report preview, find the bucket column you want to delete and click > Delete Bucket Column. Alternatively, find the bucket column in the Columns section and click X.
- 3. Click Save.

The bucket column is deleted.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To add, edit, or delete a bucket column in private reports:

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Create and
Customize Reports

# Enhanced Folder Sharing

Create and Customize Reports

To add, edit, or delete a bucket column in public and private reports:

Legacy Folder Sharing

Report Builder

## Enhanced Folder Sharing

Report Builder OR Report Builder (Lightning Experience)

# **Evaluate Report Data with Summary Formulas**

Use summary formulas to logically evaluate and do math with report results.

With the report builder, you can summarize numeric columns with four built-in functions: Sum, Average, Min, and Max. If you want to know the total value of closed opportunities, you can

calculate it by finding the Amount column in the report preview and clicking **Summarize** > **Sum**.

But what if you want to know the total value of closed opportunities after tax, and what if earnings are taxed at a progressive rate? (Say, 15% on sales below \$1,000,000, and 20% on sales above \$1,000,000). Add a summary formula column named "Amount After Tax" to your report and use a formula like this one to evaluate the Amount column:

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To create, edit, and delete summary formula columns in private reports:

Legacy Folder Sharing
Create and
Customize Reports

# Enhanced Folder Sharing

Create and Customize Reports

To create, edit, and delete summary formula columns in public and private reports:

Legacy Folder Sharing

Report Builder

# Enhanced Folder Sharing

Report Builder OR Report Builder (Lightning Experience)

IF (AMOUNT:SUM < 1000000, AMOUNT:SUM \* (1 - 0.15), AMOUNT:SUM \* (1 - 0.20))

Now you can easily incorporate after-tax earnings into fiscal quarter planning!



#### IN THIS SECTION:

1. Add a Summary Formula Column to a Report

Before adding a summary formula to your report, be sure to group report data. Summary formula columns require at least 1 group.

2. Edit a Summary Formula Column

To update a summary formula after adding it to a report, edit it.

3. Delete a Summary Formula Column

If you no longer need a summary formula column, delete it.

4. Get the Most Out of Summary Formulas: Tips, Limits, and Limitations

Summary formulas are a powerful reporting technique, but they can be tricky. Here are some tips, limits, and limitations to keep in mind when working with them.

#### SEE ALSO:

Add a Summary Formula Column to a Report Report Fields

## Add a Summary Formula Column to a Report

Before adding a summary formula to your report, be sure to group report data. Summary formula columns require at least 1 group.

Summary formula columns are available in both Lightning Experience and Salesforce Classic. They use the same formula language, so the summary formulas you add in Lightning Experience work in Salesforce Classic, and vice versa.

The steps for adding a summary formula column are a little different depending on whether you're using Lightning Experience or Salesforce Classic. Follow the instructions based on whether you're using the Lightning Experience or the Salesforce Classic report builder.



**Note**: Summary formulas are powerful and complex. For help building your formula, refer to Formula Operators and Functions in Salesforce Help.

#### Add a Summary Formula Column in Lightning Experience

- 1. Edit or create a report.
- 2. If necessary, group report data. From the Groups section, select a field from the **Add group...** lookup menu under GROUP ROWS.
- **3.** From the Columns section, click **> Add Summary Formula Column**.
- **4.** Optionally, to open the full editor, click **Switch to Full Editor**.
- **5.** Enter a summary formula. For example:

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete summary formula columns in private reports:

Legacy Folder Sharing
Create and
Customize Reports

## Enhanced Folder Sharina

Create and
Customize Reports

To create, edit, and delete summary formula columns in public and private reports:

Legacy Folder Sharing

Report Builder

## Enhanced Folder Sharina

Report Builder OR Report Builder (Lightning Experience)

IF(AMOUNT:SUM < 1000000, AMOUNT:SUM \* (1 - 0.15), AMOUNT:SUM \* (1 - 0.20))

- **6.** To see if your formula contains errors, click **Check Syntax**. Resolve any errors.
- 7. Optionally, click **FORMAT** to choose how to format results, how many decimal points to show, and to change where the formula gets applied.
- 8. Click Apply.

#### 9. Click Save.

#### Add a Summary Formula Column in Salesforce Classic

- 1. Edit or create a report.
- 2. If necessary, group report data. Change the format to **Summary**, **Matrix**, or **Joined**, find the field you want to group by, and drop it into the grouping field.
- 3. From the Fields pane, in the Formulas folder, click **Add Formula**.
- **4.** Enter a name for your formula column. The label must be unique. Optionally, enter a description.
- 5. From the Format dropdown list, select the appropriate data type for your formula based on the output of your calculation.
- **6.** From the Decimal Places dropdown, select the number of decimal places to display for currency, number, or percent data types. This setting is ignored for currency fields in multicurrency organizations. Instead, the Decimal Places for your currency setting apply.
- 7. Set the Where will this formula be displayed? option. The formula calculation displays in the report at the level you select. To display the formula calculation at every level, including the Grand Total, select All summary levels.
- 8. Build your formula.
  - a. Select one of the fields listed in the **Summary Fields** dropdown list. This field's value is used in your formula.
  - b. Select a summary type for use in your formula. This option is not available for Record Count.

| Summary Type   | Description  |
|----------------|--|
| Sum            | The summary value of data in a field or grouping of fields.  |
| Largest Value  | The largest value of data in a field or grouping of fields.  |
| Smallest Value | The smallest value of data in a field or grouping of fields. |
| Average        | The average of data in a field or grouping of fields.        |

- **c.** To add operators (like > or <) to your formula, click **Operators**.
- **d.** Select the function category (All, Logical, Math, or Summary), choose the function you want to use in your formula, and click **Insert**.
- e. Repeat these steps as necessary.
- 9. To see if your formula contains errors, click **Check Syntax**. If there are errors, the cursor highlights them.
- **10.** Click **OK**.
- 11. Click Save.

The summary formula column appears in your report.

#### SEE ALSO:

Build a Report in Salesforce Classic

**Evaluate Report Data with Summary Formulas** 

Get the Most Out of Summary Formulas: Tips, Limits, and Limitations

Build a Custom Summary Formula for a Joined Report

## Edit a Summary Formula Column

To update a summary formula after adding it to a report, edit it.

The steps for editing a summary formula column are a little different depending on whether you're using Lightning Experience or Salesforce Classic. Follow the instructions based on whether you're using the Lightning Experience or the Salesforce Classic report builder.



**Note:** Summary formulas are powerful and complex. For help building your formula, refer to Formula Operators and Functions in Salesforce Help.

## Edit a Summary Formula Column in Lightning Experience

- 1. Edit a report.
- From the Formula Columns section, click the formula column you want to edit. (Don't click
   It deletes the formula column. If you accidentally delete the formula column, undo the deletion by clicking
- **3.** Optionally, to open the full editor, click **Switch to Full Editor**.
- **4.** Edit the summary formula.
- **5.** To see if your formula contains errors, click **Check Syntax**. Resolve any errors.
- **6.** Optionally, click **FORMAT** to choose how to format results, how many decimal points to show, and to change where the formula gets applied.
- 7. Click Apply.
- 8. Click Save.

#### Edit a Summary Formula Column in Salesforce Classic

- 1. Edit a report.
- **3.** Enter a name for your formula column. The label must be unique. Optionally, enter a description.
- **4.** From the Format dropdown list, select the appropriate data type for your formula based on the output of your calculation.
- 5. From the Decimal Places dropdown, select the number of decimal places to display for currency, number, or percent data types. This setting is ignored for currency fields in multicurrency organizations. Instead, the Decimal Places for your currency setting apply.
- **6.** Set the Where will this formula be displayed? option. The formula calculation displays in the report at the level you select. To display the formula calculation at every level, including the Grand Total, select All summary levels.
- 7. Build your formula.
  - **a.** Select one of the fields listed in the **Summary Fields** dropdown list. This field's value is used in your formula.
  - **b.** Select a summary type for use in your formula. This option is not available for Record Count.

| Summary Type | Description   |
|--------------|---|
| Sum          | The summary value of data in a field or grouping of fields. |

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# USER PERMISSIONS

To create, edit, and delete summary formula columns in private reports:

Legacy Folder Sharing
Create and
Customize Reports

#### Enhanced Folder Sharina

Create and Customize Reports

To create, edit, and delete summary formula columns in public and private reports:

Legacy Folder Sharing

Report Builder

## Enhanced Folder Sharina

Report Builder OR Report Builder (Lightning Experience)

| Summary Type   | Description  |
|----------------|--|
| Largest Value  | The largest value of data in a field or grouping of fields.  |
| Smallest Value | The smallest value of data in a field or grouping of fields. |
| Average        | The average of data in a field or grouping of fields.        |

- **c.** To add operators (like > or <) to your formula, click **Operators**.
- **d.** Select the function category (All, Logical, Math, or Summary), choose the function you want to use in your formula, and click **Insert**.
- **e.** Repeat these steps as necessary.
- **8.** To see if your formula contains errors, click **Check Syntax**. If there are errors, the cursor highlights them.
- 9. Click OK.
- 10. Click Save.

The summary formula column updates to reflect your edits.

## Delete a Summary Formula Column

If you no longer need a summary formula column, delete it.

The steps for deleting a summary formula column are a little different depending on whether you're using Lightning Experience or Salesforce Classic. Follow the instructions based on whether you're using the Lightning Experience or the Salesforce Classic report builder.

### Delete a Summary Formula Column in Lightning Experience

- 1. Edit or create a report.
- 2. From the Formula Columns section, find the summary formula column you want to delete and click X.
- 3. Click Save.

#### Delete a Summary Formula Column in Salesforce Classic

- 1. Edit or create a report.
- 2. From the Fields pane, in the Formulas folder, find the summary formula column you want to delete and click in
- 3. Click Save.

The summary formula column deletes and disappears from your report.

If you accidentally delete a formula column in Lightning Experience, undo the deletion by clicking . If you leave the report builder and then return to it, then you can't undo the deletion. You can't undo a deletion in Salesforce Classic. If you can't undo the deletion, deleting a summary formula column is permanent. To get it back, you'll have to recreate it from scratch.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To create, edit, and delete summary formula columns in private reports:

Legacy Folder Sharing
Create and
Customize Reports

## Enhanced Folder Sharing

Create and Customize Reports

To create, edit, and delete summary formula columns in public and private reports:

Legacy Folder Sharing

Report Builder

## Enhanced Folder Sharina

Report Builder OR Report Builder (Lightning Experience)

## Get the Most Out of Summary Formulas: Tips, Limits, and Limitations

Summary formulas are a powerful reporting technique, but they can be tricky. Here are some tips, limits, and limitations to keep in mind when working with them.

Functions for use with summary formulas in reports are available under the function category. Select a function, then click **Help on this function** for information.

- A summary formula can't reference another summary formula.
- You can't group report data by summary formula columns.
- You can't filter report data by summary formula columns.
- You can't reorder summary formula columns.
- Before adding a summary formula column, group report data at least once.
- Summary formulas can contain 3900 or fewer characters.
- Regardless of the summary formula data type, your summary formula can contain fields of different data types, including: number, currency, percent, and checkbox (true/false) fields. For example, a summary formula in an Opportunities with Partners report can reference opportunity Amount or Stage Duration, as well as account Annual Revenue.
- In Salesforce Classic, dashboard and report charts that display values from summary formulas
  display decimal places using your default currency setting instead of what you specified for the
  formula. For example, if the summary formula specifies zero decimal places, no decimal places
  appear in columns, but chart values show the number of decimal places specified for your
  default currency (usually two decimal places). This applies to currencies, numbers, and
  percentages.
- When a field is deleted or is unavailable (for example, because of field-level security), all summary formulas that contain the field are removed from the report.
- The summary types Sum, Largest Value, Smallest Value, and Average are not available for use with the Record Count field.
- The Smallest Value summary type includes blank (null) or zero values in the summary formula calculation if these values are present in your report data.
- The Largest Value summary type includes the largest blank (non-null) value present in your report data.
- Percents are represented as decimals in summary formulas. 20% is represented as 0.20.
- Operators can be used to give fields in summary formulas a negative value. For example:
   {!EMPLOYEES:SUM} + {!SALES:SUM}.
- For summary formulas on matrix reports, Salesforce calculates results for all formulas where the Where will this formula be displayed? option is not set to All summary levels. The formula determines the value returned. If null is returned, the cell will be empty.
- Summary fields on tabular, summary, and matrix reports can display up to 21-digits. Summary fields of 21 digits will display precisely, but more than 21 digits may not be precise. If "#Too Big!" appears in report cells, check your formula for calculations that could result in more than 18 digits. Avoid multiplying large numbers, raising a large number to a power, or dividing by a very small number.
- Formulas treat blank (null) report cells as zero values.
- "#Error!" displays on report cells whenever an error occurs while calculating a formula's value. "#Error!" also displays when formulas divide by zero. To resolve the error, check your formula and provide an alternative value.

# **EDITIONS**

Available in: both Salesforce Classic and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete summary formula columns in private reports:

Legacy Folder Sharing
Create and
Customize Reports

## Enhanced Folder Sharing

Create and
Customize Reports

To create, edit, and delete summary formula columns in public and private reports:

Legacy Folder Sharing

Report Builder

## Enhanced Folder Sharing

Report Builder OR Report Builder (Lightning Experience)

• Cross-block summary formulas are available for joined reports.

#### SEE ALSO:

Add a Summary Formula Column to a Report Custom Summary Formulas with Joined Reports Build a Custom Summary Formula for a Joined Report

# Combine Different Types of Information in a Joined Report

The joined report format lets you view different types of information in a single report. A joined report can contain data from multiple standard or custom report types.

Watch a Demo: Introducing Joined Reports in Salesforce (Salesforce Classic)

To get started with joined reports, create a new or edit an existing report in report builder, click the **Format** drop-down, and choose Joined.

Joined reports are made up of up to 5 blocks. Each block shows data from one standard or custom report type, so a joined report includes data from up to 5 different report types. Report types can only be joined if they share common fields with each other. For example, Opportunities and Accounts can be joined because they share common fields like Account Name and Account ID. Each block returns up to 2,000 records, which means that a joined report with 5 blocks can return up to 10,000 records. When you group data, you group data across blocks, which means you can only group data by common fields. Common fields are fields that each object has. When you filter joined reports, each filter is independently applied to each block. As you can imagine, these attributes make joined reports quite useful!

For example, create the ultimate sales report by building a joined report. Add three blocks to the joined report that give you a complete view of your operation: Accounts, Opportunities, and Cases.

Or, build a joined report to get the birds-eye-view of your customer service operation. Add three blocks and assign each of them the Cases report type. Filter block 1 by *Status equals Open*, block 2 by *Status equals In Progress*, and block 3 by *Status equals Closed*. Here's a simple joined report that shows Accounts and Opportunities grouped by Account Name.

# **EDITIONS**

Available in: both Lightning Experience and Salesforce Classic

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

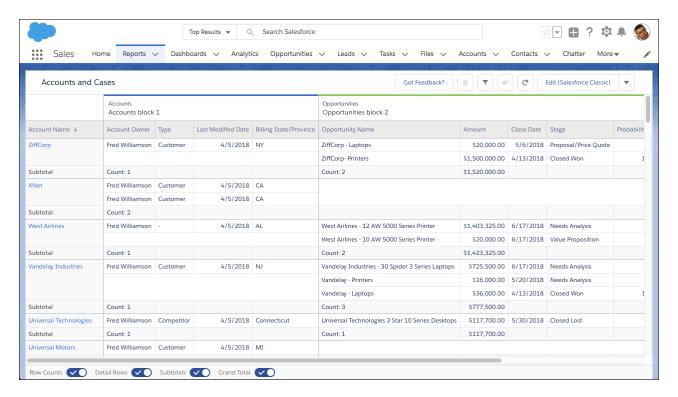
**AND** 

Report Builder

# Enhanced Folder Sharing

Create and Customize Reports

AND



- Tip: You can show a joined report that includes a chart on a dashboard. Edit the joined report dashboard component and select **Use chart as defined in the source report**.
- Note: As a beta feature, Lightning Experience joined reports is a preview and isn't part of the "Services" under your master subscription agreement with Salesforce. Use this feature at your sole discretion, and make your purchase decisions only on the basis of generally available products and features. Salesforce doesn't guarantee general availability of this feature within any particular time frame or at all, and we can discontinue it at any time. This feature is for evaluation purposes only, not for production use. It's offered as is and isn't supported, and Salesforce has no liability for any harm or damage arising out of or in connection with it. All restrictions, Salesforce reservation of rights, obligations concerning the Services, and terms for related Non-Salesforce Applications and Content apply equally to your use of this feature.

#### IN THIS SECTION:

1. Enable Lightning Joined Reports (Beta)

To start working with joined reports in Lightning Experience, opt your Salesforce org into the beta.

2. How Joined Reports Work

A joined report can contain data from multiple standard or custom report types. You can add report types to a joined report if they have relationships with the same object or objects. For example, if you have a joined report that contains the Opportunities report type, you can add the Cases report type as well because both have a relationship with the Accounts object.

3. Add a Report Type to a Joined Report

Adding a report type lets you expand the set of data available for analysis in a joined report.

4. Change the Principal Report Type

The principal report type controls how common fields are named. A joined report must have a principal report type. You can change the principal report type at any time

5. Custom Summary Formulas with Joined Reports

Two types of custom summary formulas are available with joined reports: standard and cross-block.

#### 6. Work with Blocks

Blocks let you create different views of the information contained in a joined report.

#### 7. Joined Report Examples

Creating a sales rep performance scorecard, reviewing support cases by status, and predicting your opportunity pipeline are some examples of what you can do with joined reports. Here's how.

8. Joined Report Limits, Limitations, and Allocations

Most of the things you can do with summary or matrix reports you can also do with joined reports, such as find, add, and remove fields; summarize fields; and run and save reports. However, there are some things you can't do. When working with Lightning Experience joined reports, there are some Lightning Experience-specific limits and limitations to consider.

SEE ALSO:

Build a Report in Salesforce Classic How Joined Reports Work

## Enable Lightning Joined Reports (Beta)

To start working with joined reports in Lightning Experience, opt your Salesforce orginto the beta.

Note: As a beta feature, Lightning Experience joined reports is a preview and isn't part of the "Services" under your master subscription agreement with Salesforce. Use this feature at your sole discretion, and make your purchase decisions only on the basis of generally available products and features. Salesforce doesn't guarantee general availability of this feature within any particular time frame or at all, and we can discontinue it at any time. This feature is for evaluation purposes only, not for production use. It's offered as is and isn't supported, and Salesforce has no liability for any harm or damage arising out of or in connection with it. All restrictions, Salesforce reservation of rights, obligations concerning the Services, and terms for related Non-Salesforce Applications and Content apply equally to your use of this feature.

- From Setup, enter Reports in the Quick Find box, then select Reports and Dashboards Settings.
- 2. Select Enable Lightning Joined Reports (Beta).
- 3. Click Save.

Voilà! Joined reports and Lightning Experience together at last.

As you get ready to work with joined reports in Lightning Experience, take note of these beta limitations. These features aren't available in the beta version of Lightning joined reports, but we're working hard to implement them in a future release.

# EDITIONS

Available in: Lightning Experience

Available in: Essentials, Group, Professional, Enterprise, Performance, Unlimited, and Developer Editions

Available in: Enhanced Folder Sharing

# **USER PERMISSIONS**

To opt your org into the Lightning Experience joined reports beta:

Customize Application

- Create and Edit joined reports in the Lightning report builder. Instead, create and edit joined reports in the Salesforce Classic report builder embedded in Lightning Experience.
- Charts
- Edit filters while viewing (although, you can see them in the Filters panel)
- Subscriptions
- Export
- Open in Quip
- Add to Dashboard
- Chatter feeds

- Save (although Save As is available)
- Sort ascending and descending by column while viewing (though you can see how columns are sorted)
- Trend
- Einstein Data Insights



# How Joined Reports Work

A joined report can contain data from multiple standard or custom report types. You can add report types to a joined report if they have relationships with the same object or objects. For example, if you have a joined report that contains the Opportunities report type, you can add the Cases report type as well because both have a relationship with the Accounts object.

A joined report consists of up to five report *blocks*, which you add to the report to create multiple views of your data. For each block, you can add regular and summary fields, create standard and cross-block custom summary formulas, apply filters, and sort columns. You apply groupings across all blocks in the report, and can add up to three groupings to the blocks, the same as for the summary format. You can also add a chart to a joined report.

Each joined report has a *principal* report type. By default, the principal type is the first one added to the report, and is identified in the Fields pane with a small dot beside its name. For example, if you create the joined report by selecting the Opportunities report type, and then add the Cases type, the Opportunities type is the principal report type.

The principal report type controls how common fields are named. Some common fields have different names or appear in different sections in different report types. In those fields, click i to see the name of the field in other report types.

When a joined report contains multiple report types, some fields are identified as *common* fields. A field is a common field if it's shared by all report types or if all report types share a lookup relationship to the field. These fields appear in the Common Fields area in the Fields pane, and can be used to group report blocks.

### SEE ALSO:

Add a Report Type to a Joined Report Build a Custom Summary Formula for a Joined Report Work with Blocks

# Add a Report Type to a Joined Report

Adding a report type lets you expand the set of data available for analysis in a joined report.

1. Select Joined from the report format menu.

# 2. Click Add Report Type.

The Choose an Additional Report Type overlay appears and displays the report types that you can add to the existing report.

**3.** Select the report type.

The overlay displays a message that identifies the objects that are common to the selected report type and the types already included in the report.

### 4. Click OK.

The additional report type is added. Notice that:

- A new block appears in the report.
- The Fields pane updates with a new area that contains fields unique to the report type. Fields common to all report types are in the Common Fields area.

### SEE ALSO:

Build a Custom Summary Formula for a Joined Report How Joined Reports Work Combine Different Types of Information in a Joined Report

# **EDITIONS**

Available in: both Lightning Experience and Salesforce Classic

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# USER PERMISSIONS

To create, edit, and delete reports:

Legacy Folder Sharing
Create and
Customize Reports

# Enhanced Folder Sharing

Create and Customize Reports

# Change the Principal Report Type

The principal report type controls how common fields are named. A joined report must have a principal report type. You can change the principal report type at any time

By default, the first report type you add to the report is the principal.

The principal report type doesn't affect what data is available for reporting.

Change the principal report type by removing its blocks. To remove a block, drag it to the Fields pane. If there are multiple blocks based on the principal report type, you must remove them all.

When you remove the principal report type, the way the new report type is selected depends on how many report types the report contains.

- If the report contains only two report types, the other report type automatically becomes the principal.
- If the report contains more than two report types, a dialog displays that prompts you to pick one of them as the new principal report type.

#### SEE ALSO:

Add a Block to a Joined Report

Add a Report Type to a Joined Report

Joined Report Limits, Limitations, and Allocations

Combine Different Types of Information in a Joined Report

# **EDITIONS**

Available in: both Lightning Experience and Salesforce Classic

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

**AND** 

Report Builder

### Enhanced Folder Sharing

Create and Customize Reports

AND

Report Builder

# Custom Summary Formulas with Joined Reports

Two types of custom summary formulas are available with joined reports: standard and cross-block.

### Standard Custom Summary Formulas

Standard custom summary formulas apply to one report type, and can be added to blocks that are based on that report type only. For example, a summary formula created for the Cases report type can only be applied to Cases blocks. Custom summary formulas in joined reports support the same data formats, formula options, functions, and calculation display locations as they do with summary and matrix reports.

Keep the following in mind when working with custom summary formulas in joined reports.

- The formulas aren't automatically added to the report when you create them. To add a formula, drag it to a block with the same report type.
- When you add custom summary formulas to a block, they appear to the right of the standard fields in the order in which you added them to the block. If you also add cross-block custom summary formulas, they appear to the right of the standard ones.

# **EDITIONS**

Available in: both Lightning Experience and Salesforce Classic

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

• The results of custom summary formulas are affected by the filter options applied to the blocks they're included in. As a result, the same formula can yield different results in different blocks.

- You can add up to 10 custom summary formulas to each block in a joined report. A joined report can have a total of 50 custom summary formulas.
- Each custom summary formula must have a unique name. However, standard and cross-block custom summary formulas can have the same name.
- Custom summary formula names can't include brackets ( "[" or "]").

### Cross-Block Custom Summary Formulas

Cross-block custom summary formulas let you calculate values across multiple blocks in a joined report. For example, you can use a cross-block formula to calculate the ratio of open to closed opportunities for an account or the ratio of closed pipeline deals to sales targets.

Building a cross-block formula is similar to creating a standard one. The same data formats, formula options, functions, and calculation display locations are available. The formula syntax is also similar, except that block information is also included. For example, when calculating the ratio of opportunities to cases for each account, the formula also includes the block title: [Opportunities block 1]RowCount / [Cases block 2]RowCount. Note that if you omit block title, you see an error message when you check formula syntax or save the formula.

Keep the following in mind when working with cross-block custom summary formulas.

- You can add a cross-block formula to any block in the report.
- Cross-block formulas aren't automatically added to the report when you create them. To add a formula, drag it to a block.
- When you add cross-block formulas to a block, they appear to the right of standard ones in the order in which you add them to the block.
- The results of cross-block formulas are affected by the filter options applied to the blocks in the report. As a result, a cross-block formula can yield different results when you change filter options.
- Each joined report can have up to 10 cross-block custom summary formulas.
- Deleting a block that's used in a cross-block formula also deletes the formula from both the Fields pane and any remaining blocks containing it.
- Each cross block formula must have a unique name. However, standard and cross-block custom summary formulas can have the same name.
- Cross-block formula names can't include brackets ("[" or "]").

### IN THIS SECTION:

### Build a Custom Summary Formula for a Joined Report

You can add standard or cross-block custom summary formulas for joined reports to calculate additional totals based on the numeric fields available in the report.

### SEE ALSO:

Add a Summary Formula Column to a Report
Get the Most Out of Summary Formulas: Tips, Limits, and Limitations
Joined Report Examples
Build a Custom Summary Formula for a Joined Report

Build a Custom Summary Formula for a Joined Report

You can add standard or cross-block custom summary formulas for joined reports to calculate additional totals based on the numeric fields available in the report.

1. Use one of these options to access the Add Summary Formula overlay from the Fields pane.

| Option   | Description   |
|--|---|
| To create a standard custom summary formula    | Go to the report type category, and double-click <b>Add Formula</b>       |
| To create a cross-block custom summary formula | Go to the Common category and double-click <b>Add Cross Block Formula</b> |

- 2. Enter a name for the formula as you want it to appear in the report, and optionally a description.

  The name must be unique.
- **3.** From the Format dropdown list, select the appropriate data type for your formula based on the output of your calculation.
- **4.** From the Decimal Places dropdown, select the number of decimal places to display for currency, number, or percent data types. This setting is ignored for currency fields in multicurrency organizations. Instead, the Decimal Places for your currency setting apply.
- 5. Set the Where will this formula be displayed? option.

  The calculated value displays in the report block at either the Grand Total or the global grouping level, depending on which you select. To display the formula calculation at every level, including the Grand Total, select All summary levels. Optionally you can select to show the calculation at a global grouping level. You can have three global groupings in a joined report. The groupings apply across all blocks.

### 6. Build your formula:

**a.** Select one of the fields listed in the **Summary Fields** dropdown list. This field's value is used in your formula.

When creating a cross-block formula, the fields are grouped by block. You can also use Quick Find to search for a field. When creating a single-report type formula, the list displays numeric fields available for the report type.

**b.** Select a summary type for use in your formula. This option is not available for Record Count.

| Summary Type   | Description  |
|----------------|--|
| Sum            | The summary value of data in a field or grouping of fields.  |
| Largest Value  | The largest value of data in a field or grouping of fields.  |
| Smallest Value | The smallest value of data in a field or grouping of fields. |
| Average        | The average of data in a field or grouping of fields.        |

**c.** To add operators (like > or <) to your formula, click **Operators**.

# **EDITIONS**

Available in: both Lightning Experience and Salesforce Classic

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

AND

Report Builder

### Enhanced Folder Sharing

Create and Customize Reports

AND

Report Builder

**d.** Select the function category (All, Logical, Math, or Summary), choose the function you want to use in your formula, and click **Insert**.

- **e.** Repeat these steps as necessary.
- 7. To see if your formula contains errors, click **Check Syntax**. If there are errors, the cursor highlights them.
- 8. Click OK.
- 9. Click Save.

The summary formula column appears in your report.

#### SEE ALSO:

Evaluate Report Data with Summary Formulas

Custom Summary Formulas with Joined Reports

Get the Most Out of Summary Formulas: Tips, Limits, and Limitations

Joined Report Examples

### Work with Blocks

Blocks let you create different views of the information contained in a joined report.

### IN THIS SECTION:

### 1. Add a Block to a Joined Report

Adding blocks to joined reports lets you create multiple views of the data included in a single report.

#### 2. Reorder Blocks

You can reorder blocks in a joined reports. Reordering blocks affects the report's appearance but doesn't affect the data in the blocks.

### 3. Rename a Block

You can rename blocks to provide more user-friendly descriptions of the information they contain

### 4. Show and Hide the Record Count for a Block

You can choose to show or hide the number of records, or *record count*, for each block in a joined report. By default, record count is displayed for each block in the report builder and on the run reports page.

### 5. Delete a Block

When you no longer need a block, delete it.

# **EDITIONS**

Available in: both Lightning Experience and Salesforce Classic

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

### Legacy Folder Sharing

Create and Customize Reports

AND

Report Builder

# Enhanced Folder Sharing

Create and Customize Reports

**AND** 

Report Builder

Add a Block to a Joined Report

Adding blocks to joined reports lets you create multiple views of the data included in a single report.

1. Click and hold a field from the Fields pane, then drag it to the empty area of the Preview pane.

# EDITIONS

Available in: both Lightning Experience and Salesforce Classic

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and
Customize Reports

AND

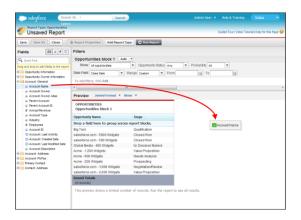
Report Builder

# Enhanced Folder Sharing

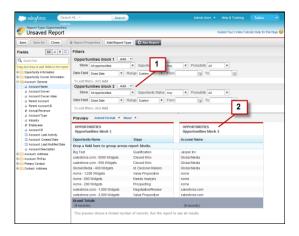
Create and Customize Reports

AND

Report Builder



2. Drop the field to create the block.



When you've added the block, notice that standard and field filters for the additional block are added to the Filters pane (1). Also, the new block appears in the Preview pane (2).

To delete a block, click in the block header, then click **Remove Block**. Or just drag the block to the Fields pane. Keep the following in mind when working with blocks.

- Adding a new report type to a joined report also adds a new block.
- You must choose a field from a report type category when creating a block. You can't use a field from the Common category. For example, if your report contains both the Opportunities and the Cases report types, choosing a field from the Opportunities category creates a new Opportunities block, while choosing a field from the Cases category creates a new Cases block.

### SEE ALSO:

Add a Report Type to a Joined Report

Delete a Block

Build a Custom Summary Formula for a Joined Report

Work with Blocks

Combine Different Types of Information in a Joined Report

### Reorder Blocks

You can reorder blocks in a joined reports. Reordering blocks affects the report's appearance but doesn't affect the data in the blocks.

When you reorder blocks, block numbers don't change. For example, if you have a report containing three blocks, and you move block 1 to a new position to the right of block 3, the blocks now display as block 2, block 3, and block 1. You should rename the blocks to avoid confusion.

When reordering a block, you move it to either the left or right of an existing block. You can't drag it to an empty area in the Preview pane.

### To reorder a block:

In the Preview pane, drag the block to either the left or right side of an existing block.
 A blue bar beside the block indicates an acceptable drop location.

### SEE ALSO:

Rename a Block Work with Blocks

# **EDITIONS**

Available in: both Lightning Experience and Salesforce Classic

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

**AND** 

Report Builder

### Enhanced Folder Sharing

Create and Customize Reports

AND

Report Builder

### Rename a Block

You can rename blocks to provide more user-friendly descriptions of the information they contain.

When you add a block to a joined report, it's named automatically based on the report type and the number of blocks in the report. For example, if your report contains two blocks and you add a new block that's based on the Opportunities report type, it's named Opportunities block 3.

1. Click the block's name.

The name now appears in an editable text box.

# **EDITIONS**

Available in: both Lightning Experience and Salesforce Classic

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

**Legacy Folder Sharing** 

Create and Customize Reports

**AND** 

Report Builder

### Enhanced Folder Sharing

Create and Customize Reports

AND

Report Builder



- **2.** Enter the new name.
- **3.** Press Enter or click outside the block to apply the name.

#### SEE ALSO:

Work with Blocks

Combine Different Types of Information in a Joined Report

Show and Hide the Record Count for a Block

You can choose to show or hide the number of records, or *record count*, for each block in a joined report. By default, record count is displayed for each block in the report builder and on the run reports page.

You can hide or show record count two ways.

- Click the arrow in the block header ( ) to display the block menu. The check mark beside the **Record Count** menu item shows that record count is enabled for the block. Click **Record Count** to toggle between showing and hiding the count.
- When you've hidden report details, position the cursor over the Record Count column to display
  an arrow ( ). Click the arrow, and select Remove Column. To display record count again,
  click the arrow in the block header and select Record Count.



### SEE ALSO:

Show and Hide Report Details
Use a Summary Function in a Custom Summary Formula

# **EDITIONS**

Available in: both Lightning Experience and Salesforce Classic

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

**AND** 

Report Builder

### Enhanced Folder Sharing

Create and Customize Reports

AND

Report Builder

# Delete a Block

When you no longer need a block, delete it.

There are two ways to delete a block from a joined report.

Click the arrow in the block header ( ) to display the block menu, then click Remove Block.

Click and hold in the block header, and drag the block to the Fields pane.

### SEE ALSO:

Work with Blocks

Combine Different Types of Information in a Joined Report

# EDITIONS

Available in: both Lightning Experience and Salesforce Classic

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To delete reports in My Personal Custom Reports folder:

Legacy Folder Sharing
Create and
Customize Reports

# Enhanced Folder Sharing

Create and Customize Reports

To delete reports in public folders:

Legacy Folder Sharing

Manage Public

Reports

# Enhanced Folder Sharing

Manage Reports in Public Folders

# Joined Report Examples

Creating a sales rep performance scorecard, reviewing support cases by status, and predicting your opportunity pipeline are some examples of what you can do with joined reports. Here's how.

Accounts with Open Cases (Lightning Experience)

A joined report is an ideal way to see Accounts that have open Cases. To create a joined report in Lightning Experience, use the embedded Salesforce Classic report builder.

- 1. Create a report using the embedded Salesforce Classic report builder. From the Reports tab, click **New Report (Salesforce Classic)**.
- 2. Select the Accounts report type. Then, click Create.
- **3.** If necessary, customize standard filters. For example, set *Show* to **All accounts** and *Range* to **All Time**
- 4. From the Preview pane, open the Format drop-down menu and select Joined.
- 5. Click Add Report Type.
- **6.** Expand the *Customer Support Reports* folder and choose **Cases**. Then, click **OK**.
- **7.** If necessary, continue to customize the report. For example, we want to see only open cases, which we can achieve by adding a field filter to block 2.
  - From the Filters pane, next to Cases block 2, click **Add**.
  - Set the filter to Closed equals False.
  - Click OK.
- **8.** If necessary, group across blocks using common fields. Common fields are shared between all objects in the joined report. For example, we can group this report by *Account Owner*.
- 9. Click Save.
- 10. Click Save and Run Report.

Admire your handiwork and start gaining actionable insights!

# **EDITIONS**

Available in: both Lightning Experience and Salesforce Classic

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

**AND** 

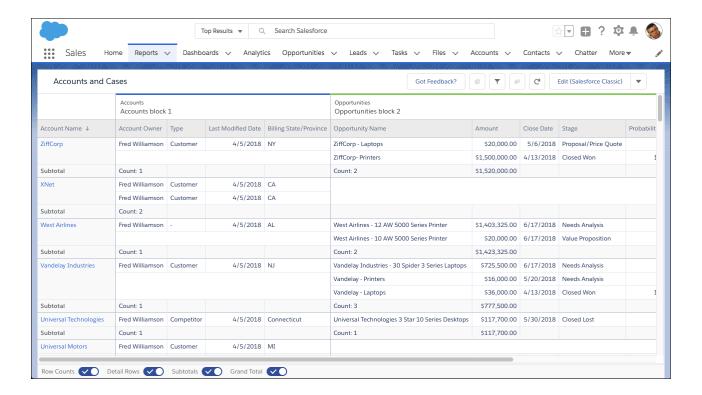
Report Builder

### Enhanced Folder Sharing

Create and Customize Reports

AND

Report Builder



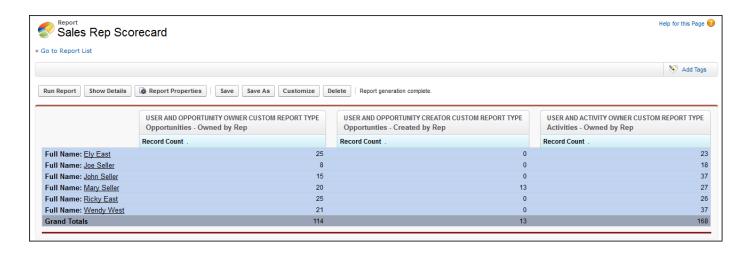
### Creating a Sales Rep Performance Scorecard (Salesforce Classic)

A sales rep scorecard lets your sales management team understand the performance and actions of your organization's sales reps. To create it, you need to have three separate custom report types, each of which creates a relationship between User (as the primary object) and one of the following three objects: Opportunity Owner, Opportunity Creator, and Activity Owner. Note that, in this example, we've named the custom report types User and Opportunity Owner Custom Report, User and Opportunity Creator Custom Report, and User and Activity Owner Custom Report.

Start by creating a new custom report based on the User and Opportunity Owner custom report type, and then add the User and Opportunity Creator and User and Activity owner custom report types as two additional blocks. Then, group by Sales Rep (opportunity owner) and set the filters as described in the procedure.

#### To create the report:

- 1. Create a new report, selecting User and Opportunity Owner Custom Report as the report type.
- 2. Select Joined from the Format drop-down.
- 3. Click Add Report Type.
- 4. Select User and Opportunity Creator Custom Report.
- 5. Click Add Report Type again, and choose User and Activity Owner Custom Report.
- **6.** Group the blocks by Full Name.
- 7. Add additional fields and filters to the report as needed. For example, you might want to change the date filters to focus on rep performance during a particular time frame. Or, to make sure that only sales people are included as opportunity owners, create a filter on the Role: Name filter limit your results to users with "Sales" in their roles.
- **8.** Optionally, provide names for the blocks.
- 9. Click Save or Run Report.

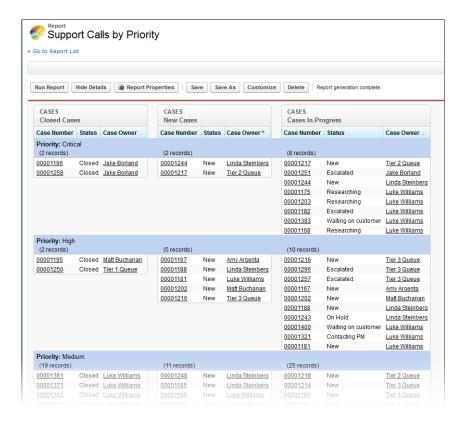


# Reviewing Support Cases by Status (Salesforce Classic)

You can also create a report comparing the number of support cases that are new, closed, or in-progress by priority. The report contains a single standard report type: Cases. First, create the report, add three blocks to the report, filter each block by the appropriate status, and then use the Priority field for grouping.

### To create the report:

- 1. Create a new report, selecting Cases as the report type.
- 2. Select Joined from the Format drop-down.
- 3. Remove unwanted fields by dragging them to the Fields pane.
- 4. Create three blocks, each containing the Case Number and Status and, optionally, Case Owner fields.
- 5. For each block, filter on all cases. Then, filter each of the blocks by Status as follows:
  - Block 1: Status equals Closed
  - Block 2: Status equals New
  - Block 3: Status not equal to Closed, New, Closed in Portal, Closed First Call
- **6.** Group the blocks by Priority.
- 7. Optionally, rename the blocks.
- 8. Click Save or Run Report.



### Predicting Opportunity Pipeline (Salesforce Classic)

Using cross-block custom summary formulas, you can create a report that predicts future opportunity revenue based on your sales reps' past performance. Create a report based on the Opportunities standard report type, add three blocks to the report, filter each block by the appropriate status, and then create a formula that uses fields from different blocks.

### To create the report:

- 1. Create a new joined report, selecting Opportunities as the report type.
- 2. Remove unwanted fields by dragging them to the Fields pane.
- 3. Create three blocks, each containing the Opportunity Name, Account Name and Amount fields.
- **4.** For each block, show All Opportunities. Then, filter each block.

| Block   | Filters                              |
|---------|--------------------------------------|
| Block 1 | Opportunity Status equals Closed     |
|         | Date Field equals Close Date         |
|         | Range equals Current and Previous FY |
|         | Stage equals Closed Lost             |
| Block 2 | Opportunity Status equals Closed Won |
|         | Date Field equals Close Date         |
|         | Range equals Current and Previous FY |
|         |                                      |

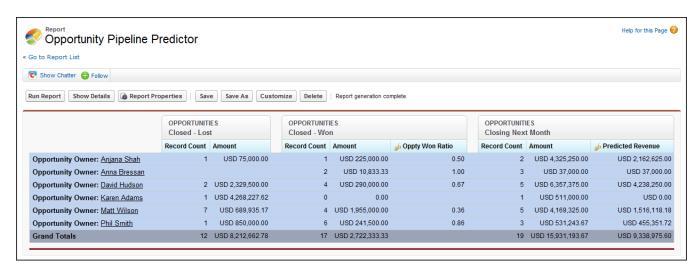
| Block   | Filters                        |
|---------|--------------------------------|
| Block 3 | Date Field equals Close Date   |
|         | Range equals Next Month        |
|         | Opportunity Status equals Open |

- 5. Group the blocks by Opportunity Owner.
- **6.** Rename the blocks. For example, "Closed Won", "Close Lost", and "Closing Next Month".
- 7. Create a cross-block custom summary formula that predicts upcoming revenue based on past sales rep performance:

- **8.** Add the formula to one or more of the blocks.
- 9. Optionally, add a cross-block custom summary formula that calculates the win ratio of each sales rep:

```
[Closed - Won]RowCount/([Closed - Lost]RowCount+[Closed - Won]RowCount)
```

### 10. Click Save or Run Report.



Adding a Chart to the Opportunity Pipeline Predictor Report (Salesforce Classic)

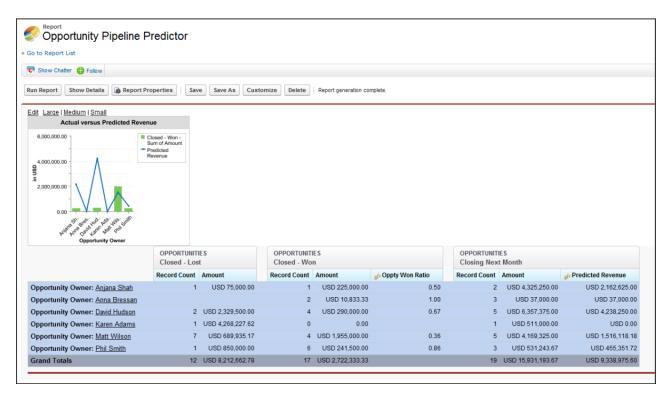
You can include a chart with a joined report to provide a visual representation of the data. For example, you can add a chart to the Opportunity Pipeline Predictor report that shows actual versus predicted revenue.

To add the chart:

- 1. Create the Predicting Opportunity Pipeline (Salesforce Classic) report.
- 2. Click Add Chart.
- **3.** For the Y-axis, select Closed Won Sum of Amount.
- 4. Select Plot additional values.
- 5. Select Line for the Display option, and Predicted Revenue as the Value.

6. Click the Formatting tab, and enter Actual versus Predicted Revenue as the chart title.

- 7. Click OK.
- 8. Click Save or Run Report.



### SEE ALSO:

Add a Chart to a Report

**Custom Summary Formulas with Joined Reports** 

How Joined Reports Work

Work with Blocks

Combine Different Types of Information in a Joined Report

### Joined Report Limits, Limitations, and Allocations

Most of the things you can do with summary or matrix reports you can also do with joined reports, such as find, add, and remove fields; summarize fields; and run and save reports. However, there are some things you can't do. When working with Lightning Experience joined reports, there are some Lightning Experience-specific limits and limitations to consider.

Here are some things you can't do with joined reports.

- Add bucketed fields.
- Add cross filters.
- Drag and drop filters from the Fields pane on to the Filter pane.
- Apply conditional highlighting.
- Change the hierarchy for opportunity or activity reports.

# EDITIONS

Available in: both Lightning Experience and Salesforce Classic

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

- Create reporting snapshots based on joined reports.
- Schedule or subscribe to joined reports in Salesforce Classic.

# Mote:

• For users to be able to create and edit joined reports, report builder must be enabled for your entire organization. When report builder isn't enabled, users can run joined reports, but can't create them.

- Joined reports require that the new user interface theme is enabled. Users without the new theme are unable to create, edit, or run joined reports.
- Internet Explorer 6 is not supported for joined reports.
- You can't filter data on a joined report in dashboard view or add a filter to a dashboard that only has joined reports.
- When using the console in run mode, the **Hide Details** and **Show Details** buttons aren't available for joined reports. To use the buttons, click **Customize** to enter edit mode.
- Joined reports aren't supported in console apps.

Standard Report Types That Can't Be Used in Joined Reports

- Accounts and Contacts
  - Account History
  - Account Owners\*
  - Contact History
- Activities
  - My Delegated Approval Requests\*
- Administrative
  - All Pending Approval Requests\*
  - API Usage Last 7 Days\*
- Campaign
  - Campaign Call Down\*
  - Campaign Member
  - Campaign Member Analysis\*
  - Campaigns with Influenced Opportunities
- Contract
  - Contract History
  - Order History
- Customer Support
  - Case History
  - Self Service Usage
  - Solution History
- File and Content
  - Content Authors
  - Content Publication Time Frame

- File and Content Downloads
- File and Content Engagement
- File and Content Links
- Library Administrators
- Library Content
- Most Content Downloads
- Most Content Subscriptions
- Stale Content

#### Forecasts

- Customizable Forecasting: Forecast History
- Customizable Forecasting: Forecast Summary
- Customizable Forecasting: Opportunity Forecasts
- Forecast History
- Forecasts
- Quota versus Actual\*
- Lead
  - Lead All
  - Lead History
  - Lead Status\*
- Opportunity
  - Opportunities with Contact Roles and Products
  - Opportunities with Opportunity Teams and Products
  - Opportunity Field History
- Price Books, Products and Assets
  - Assets without Products\*

# Note:

- You might not have access to all the report types listed here. Certain factors can affect the report types you see, such as which features your organization has enabled and how your administrator has set up report folder visibility. Check with your administrator if you think you should see a report type that you don't.
- If your organization has renamed standard objects, the names of the standard report types will contain your organization's names instead of the original ones. For example, if your organization has renamed the "Opportunity" object as "Deal," the standard report type "Opportunity Field History" will be renamed "Deal Field History."
- In this list, report types marked with an asterisk (\*) aren't available when you create a new report. Instead, you access them by customizing standard reports, which are in folders on the Reports tab.

Lightning Experience Joined Report (Beta) Feature Gaps, Differences, and Limitations

As you get ready to work with joined reports in Lightning Experience, take note of these beta limitations. These features aren't available in the beta version of Lightning joined reports, but we're working hard to implement them in a future release.

• Create and Edit joined reports in the Lightning report builder. Instead, create and edit joined reports in the Salesforce Classic report builder embedded in Lightning Experience.

- Charts
- Edit filters while viewing (although, you can see them in the Filters panel)
- Subscriptions
- Export
- Open in Quip
- Add to Dashboard
- Chatter feeds
- Save (although Save As is available)
- Sort ascending and descending by column while viewing (though you can see how columns are sorted)
- Trend
- Einstein Data Insights

#### SEE ALSO:

Choose a Report Type

Change the Principal Report Type

Combine Different Types of Information in a Joined Report

**Standard Report Types** 

# Report on Historical Changes

On top of the standard up-to-the-minute reporting on the current state of your business, you can analyze day-to-day and week-to-week changes in opportunities, cases, forecasts, and custom objects.



**Note**: Historical trend reporting with charts is supported in Lightning Experience, but tabular views of historical trend reports aren't available.

### IN THIS SECTION:

1. Track Changes Over Time with Historical Trend Reporting

Historical trend reporting uses a special custom report type designed to highlight changes between five snapshot dates, such as five business days or five business weeks. You can visually represent the data changes in charts and on dashboards.

2. Report on Historical Data with Reporting Snapshots

A reporting snapshot lets you report on historical data. Authorized users can save tabular or summary report results to fields on a custom object, then map those fields to corresponding fields on a target object. They can then schedule when to run the report to load the custom object's fields with the report's data. Reporting snapshots enable you to work with report data similarly to how you work with other records in Salesforce.

### Track Changes Over Time with Historical Trend Reporting

Historical trend reporting uses a special custom report type designed to highlight changes between five snapshot dates, such as five business days or five business weeks. You can visually represent the data changes in charts and on dashboards.

For organizations created in Winter '14 and thereafter, historical trend reporting is activated by default. If your organization is older than that, you must activate historical trend reporting in the Setup menu.

Salesforce retains historical data for the previous three months, plus the current month. (The amount of historical data you can work with in practice depends on your organization's data design and use patterns.) You can select up to five date snapshots in that span to compare, using up to four historical filters.

Longer durations than days or weeks are not recommended. They may result in reports timing out and not returning. For small organizations with fewer records, month-to-month trend reporting may work, but this is not what historical trend reporting is designed for.



Tip: You can also create and customize historical trend reporting reports via the Metadata API and the Reports and Dashboards REST API.

# IN THIS SECTION:

### Track Changes in Your Sales Pipeline

A historical report can help you monitor your company's sales pipeline to make sure it contains enough activity to meet current and future sales goals. You may want to focus on deals whose value grew or shrank in the last three months, or deals that moved into or out of a given target period.

### See How Forecast Amounts Have Changed

Let's build a historical report, in matrix format, of the amounts your team members have assigned to each forecast category. Changes in those amounts can reveal how accurately your team is forecasting.

### Track History for Cases

Monitor activity across cases and identify your case status changes in the last three months of a case's life cycle.

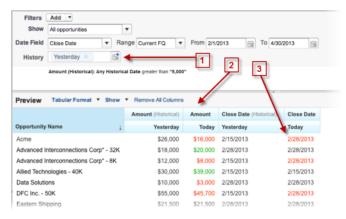
### Limitations on Historical Trend Reporting

Historical trending in Salesforce is subject to certain limits on the time during which data is tracked, the number of rows of data, and the fields and objects you can track. These limits are designed to restrict the data set so that reports return data quickly.

### Track Changes in Your Sales Pipeline

A historical report can help you monitor your company's sales pipeline to make sure it contains enough activity to meet current and future sales goals. You may want to focus on deals whose value grew or shrank in the last three months, or deals that moved into or out of a given target period.

You'll probably want to compare historical and current values of key attributes of opportunities, such as dates, amounts, and status, to see how your pipeline has changed over time. For example, this summary report points out opportunity amounts and close dates that have changed since yesterday.



- 1. Snapshot up to five dates to track day-to-day or week-to-week trends.
- 2. Current and historical values are shown side by side for easy comparison.
- 3. Changed dates and amounts are highlighted in red or green.

### IN THIS SECTION:

### 1. Watch Your Pipeline Change Over Time

Let's say you want to know how the total value of your pipeline today compares with its value yesterday. Create a simple report to compare the two dates.

### 2. Identify Historical Deals Over a Given Value

Suppose you want to focus only on deals in your pipeline worth more than \$5,000, but you're not concerned about today's fluctuations. You'll need a historical trending report that filters out any deal whose value was below \$5,000 yesterday.

#### 3. Find Deals that Have Been Pushed Out

To focus on deals that are taking more time to close than expected, create a historical trending report that finds deals in your pipeline that have had their close dates moved to a later date.

# 4. Identify Shrinking Deals

Historical trending analysis can help you prioritize by quickly identifying deals that may be at risk. For example, target the deals in your pipeline that have decreased in value since yesterday. You'll need a historical trending report that gives you the deals whose value yesterday was greater than their value today.

#### **Watch Your Pipeline Change Over Time**

Let's say you want to know how the total value of your pipeline today compares with its value yesterday. Create a simple report to compare the two dates.

- 1. Create an opportunity history report.
  - a. On the Reports tab, click New Report.
  - **b.** Under **Select Report Type** > **Opportunities**, select *Opportunities* with *Historical Trending*.

In order to see *Opportunities with Historical Trending*, turn on Historical Trend Reporting for Opportunities in the Salesforce Setup. To learn how to turn on Historical Trend Reporting for Opportunities, see *Set Up Historical Trend Reporting* in the Salesforce help.

#### c. Click Create.

2. For Show, select All Opportunities.

Note that the default value in the Historical Date Field is Yesterday, and the Amount (Historical) field shows yesterday's date.

Tip: "Yesterday" is a rolling date value, meaning that it points to a date that is relative to today's date. If you run this same report tomorrow, Amount (Historical) will show today's date.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

### Legacy Folder Sharing

Create and Customize Reports

AND

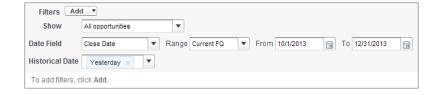
Report Builder

# Enhanced Folder Sharing

Create and
Customize Reports

AND

Report Builder



3. Click the down arrow in the headers of the Amount (Historical) and the Amount—Today columns. Click *Summarize This Field*, then select *Sum*.

The total amount appears at the bottom of each column.

- **4.** Click the down arrow in the header of the Amount column and select *Show Changes*.
- 5. Click Run Report.
- **6.** In the Change column, observe the difference between the total value of the Amount (Historical) column and that of the Amount-Today column.
  - 1 Tip: You can see changes at a glance by looking for values that are colored green or red.

You've created a simple historical trending report that can help you analyze your pipeline's behavior.

### SEE ALSO:

Opportunities with Historical Trending Report

### **Identify Historical Deals Over a Given Value**

Suppose you want to focus only on deals in your pipeline worth more than \$5,000, but you're not concerned about today's fluctuations. You'll need a historical trending report that filters out any deal whose value was below \$5,000 yesterday.

- 1. Create an opportunity history report.
  - a. On the Reports tab, click New Report.
  - **b.** Under **Select Report Type** > **Opportunities**, select *Opportunities* with *Historical Trending*.

In order to see *Opportunities with Historical Trending*, turn on Historical Trend Reporting for Opportunities in the Salesforce Setup. To learn how to turn on Historical Trend Reporting for Opportunities, see *Set Up Historical Trend Reporting* in the Salesforce help.

- c. Click Create.
- 2. For Show, select All Opportunities.
- 3. Filter for historical values over \$5,000.
  - a. Click Add and select Historical Field Filter.
  - **b.** Set Amount (Historical) to Yesterday.
  - **c.** Select *greater* than for the operator.
  - **d.** Enter 5,000 in the last field.
  - e. Click OK.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Group, Essentials, Professional, Enterprise, Performance, Unlimited, and Developer Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and
Customize Reports

**AND** 

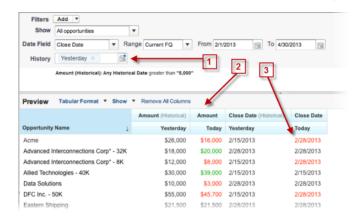
Report Builder

# Enhanced Folder Sharing

Create and
Customize Reports

**AND** 

Report Builder



### 4. Click Run Report.

5. In the finished report, observe that all the deals in the Amount - Historical column are worth more than \$5,000.



🚺 Tip: Values in the Amount, Close Date and Stage fields are shown in green or red to indicate the direction of change. You can reverse the colors by clicking the down arrow in the column header.

You've created a simple report that pulls out all the deals that have were worth more than a given amount as of a given historical snapshot date

SEE ALSO:

Opportunities with Historical Trending Report

#### Find Deals that Have Been Pushed Out

To focus on deals that are taking more time to close than expected, create a historical trending report that finds deals in your pipeline that have had their close dates moved to a later date.

- 1. Create an opportunity history report.
  - **a.** On the Reports tab, click **New Report**.
  - **b.** Under **Select Report Type** > **Opportunities**, select *Opportunities* with Historical Trending.

In order to see Opportunities with Historical Trending, turn on Historical Trend Reporting for Opportunities in the Salesforce Setup. To learn how to turn on Historical Trend Reporting for Opportunities, see Set Up Historical Trend Reporting in the Salesforce help.

- c. Click Create.
- 2. For Show, select All Opportunities.
- **3.** Filter for close dates that are later now than they were in the past.
  - a. Click Add and select Historical Field Filter.
  - **b.** Set Close Date (Historical) to Feb. 1, 2013.
    - Tip: Use the calendar under **Fixed Days** to select the date.
  - c. Click OK.
- 4. Click the down arrow in the header of the Close Date column and select Show Changes.
- 5. Click Run Report.
- **6.** For each deal in the report, compare the date in the Close Date Historical column with the date in the Close Date - Today column.
  - 🚺 Tip: You can see changes at a glance by looking for values that are colored green or red.

SEE ALSO:

Opportunities with Historical Trending Report

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Group, **Essentials Professional Enterprise**, Performance, Unlimited, and Developer **Editions** 

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

**Legacy Folder Sharing** 

Create and **Customize Reports** 

AND

Report Builder

**Enhanced Folder Sharina** 

> Create and **Customize Reports**

AND

Report Builder

### **Identify Shrinking Deals**

Historical trending analysis can help you prioritize by quickly identifying deals that may be at risk. For example, target the deals in your pipeline that have decreased in value since yesterday. You'll need a historical trending report that gives you the deals whose value yesterday was greater than their value today.

- 1. Create an opportunity history report.
  - a. On the Reports tab, click New Report.
  - **b.** Under **Select Report Type** > **Opportunities**, select *Opportunities* with *Historical Trending*.

In order to see *Opportunities with Historical Trending*, turn on Historical Trend Reporting for Opportunities in the Salesforce Setup. To learn how to turn on Historical Trend Reporting for Opportunities, see *Set Up Historical Trend Reporting* in the Salesforce help.

- c. Click Create.
- 2. For Show, select All Opportunities.
- 3. Filter out any deal that wasn't worth more yesterday than today.
  - a. Click Add and select Historical Field Filter.
  - **b.** Set Amount (Historical) to greater than.
  - c. Set the last field to Field.

Here we're choosing to compare the historical amount with whatever amount is in the Amount — Today column, and not with a specific amount.

d. Click OK.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Group, Essentials, Professional, Enterprise, Performance, Unlimited, and Developer Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and
Customize Reports

AND

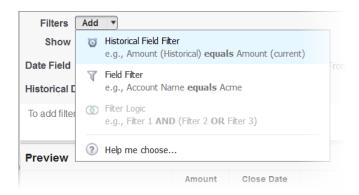
Report Builder

# Enhanced Folder Sharing

Create and
Customize Reports

**AND** 

Report Builder



4. Click Run Report.

You've created a simple report that flags deals that have shrunk since yesterday. Note that all the results in the Amount — Today column are shown in red, to indicate decreases in value.



Tip: To change the color-coding for amount changes, click the down arrow above the Change column and click **Reverse Colors**.

### SEE ALSO:

#### Opportunities with Historical Trending Report

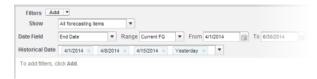
### See How Forecast Amounts Have Changed

Let's build a historical report, in matrix format, of the amounts your team members have assigned to each forecast category. Changes in those amounts can reveal how accurately your team is forecasting.

For this example, we'll assume you're about a month into the current fiscal guarter.

- 1. Create a forecast history report.
  - a. On the Reports tab, click New Report.
  - **b.** Under **Select Report Type** > **Forecasts**, select *Forecasting Items with Historical Trending*. Before you can select this report type, your organization must have enabled Historical Trending for Forecasting Items. If you do not see the report type listed, talk to your administrator.
  - c. Click Create.
- 2. In the Filters area, choose **Show** > **All forecasting items**, then set up your filters.
  - **a.** For **Date Field**, choose End Date. For **Range**, choose Current FQ. The **From** and **To** date fields automatically get the beginning and end dates for the current guarter.
  - **b.** For **Historical Date**, choose 3 Months Ago, 2 Months Ago, then 1 Month Ago from the dropdown menu. Each date you select is added to the field.

# Filter for the historical data you want.



- Tip: To move Yesterday to the right side of the field, delete it, and then add it again from the dropdown menu.

  If you're using multiple forecast types, add a filter for Forecasting Type: API Name to prevent duplicate values from appearing on the report.
- **3.** Choose the data you want to monitor for historical changes. In this case, we're interested in the category in which the changes were made and how the forecast amount changed.
  - **a.** In the **Preview** pane, change **Tabular Format** to **Matrix Format**.
  - b. Drag the Owner: Full Name field from the Field area to the Preview pane to create a row grouping.
  - c. Drag the Forecast Category field over to the right of Owner: Full Name to create another row grouping.
  - **d.** Drag the Forecast Amount (Historical) field to the matrix area of the Preview pane, below the yellow bar. In the **Summarize** dialog, select Sum.

### Select the fields that contain the data you want to track.



Columns appear for each of the historical dates you chose in the filters area that contain records.

- **4.** Click **Run Report** to see what data you've gathered so far. Then click **Customize** to keep adjusting your filters and fields if necessary.
- **5.** Once you've defined the data you want to track, create a chart to show it graphically.
  - **a.** In the Preview area, click **Add Chart** and select the line chart icon.
  - **b.** On the Chart Data tab, choose Sum of Forecast Amount (historical) for the **Y-Axis** and Snapshot Date for the **X-Axis**.
  - c. For Group By, choose Forecast Category, and select Cumulative.
  - d. Click OK, then click Run Report again.
- **6.** Click **Save As**. Choose a name and folder for the report and click **Save**.

## Track History for Cases

Monitor activity across cases and identify your case status changes in the last three months of a case's life cycle.

- 1. One way to optimize contact center operations is to observe the Status field over time, watching for cases that move backward to a previous status. This can help reveal ways to resolve cases more effectively.
- 2. For another example, try analyzing historical values of the Priority field to identify cases that may have been incorrectly classified when they were opened. Watching for frequent changes in priority may also lead to ways to improve the handling of complex cases.

### Limitations on Historical Trend Reporting

Historical trending in Salesforce is subject to certain limits on the time during which data is tracked, the number of rows of data, and the fields and objects you can track. These limits are designed to restrict the data set so that reports return data quickly.

- Salesforce retains historical data for the previous three months, plus the current month.
- Up to 5 million rows of historical trending data can be stored for each object. Historical data capture stops when the limit is exceeded.

  The admin is alerted by email when any object reaches 70 percent of the limit, and again if the limit is exceeded.
- Each historical trend report can contain up to 100 fields. In Opportunities reports, this includes the standard preselected fields, which can't be disabled.
- Formula fields are not supported.
- Row limit filters are not supported.
- The summary report format is not supported.
- You can specify up to five historical snapshot dates in each historical trend report.
- You can use up to four historical filters on each historical trend report.
- These field types are supported: Number, Currency, Date, Picklist, Lookup.
- Dated exchange rates are not supported. When you run the historical trend report, it only uses the latest dated exchange rate.
- Internet Explorer 6 is not supported.

- You can't subscribe to historical trend reports.
- The Report Wizard is not supported. Historical trend reports can only be created with the Report Builder.
- Historical trend reporting with charts is supported in Lightning Experience, but tabular views of historical trend reports aren't available.

(1) Important: If a picklist field is already being used in a historical trending data filter, think hard before changing any of its values. You could make that field less useful for historical reporting in the future.

# Report on Historical Data with Reporting Snapshots

A reporting snapshot lets you report on historical data. Authorized users can save tabular or summary report results to fields on a custom object, then map those fields to corresponding fields on a target object. They can then schedule when to run the report to load the custom object's fields with the report's data. Reporting snapshots enable you to work with report data similarly to how you work with other records in Salesforce.

After you set up a reporting snapshot, users can:

- Create and run custom reports from the target object.
- Create dashboards from the source report.
- Define list views on the target object, if it's included on a custom object tab.

For example, a customer support manager could set up a reporting snapshot that reports on the open cases assigned to his or her team everyday at 5:00 PM, and store that data in a custom object

# **EDITIONS**

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Essentials, Professional, Enterprise, Performance, Unlimited, and Developer Editions

to build a history on open cases from which he or she could spot trends via reports. Then the customer support manager could report on point-in-time or trend data stored in the custom object and use the report as a source for a dashboard component. For the total number of reporting snapshots you can create, see *Salesforce Limits*.

### IN THIS SECTION:

### 1. Prepare Reporting Snapshots

To set up a reporting snapshot, you need a source report and a target object with fields to contain the data in the source report.

# 2. Define a Reporting Snapshot

After you create a source report, target object, and target object fields, you can define your reporting snapshot. You define a reporting snapshot by naming it and choosing the source report that will load report results into the target object you specify when the reporting snapshot runs.

#### 3. Map Reporting Snapshot Fields

After you create a source report, target object, target object fields, and define your reporting snapshot, you can map the fields on your source report to the fields on your target object. You map source report fields to target object fields so that when the report runs, it automatically loads specific target object fields with data from specific source report fields.

### 4. Schedule and Run a Reporting Snapshot

After you create a source report, target object, target object fields, define your reporting snapshot, and map its fields, you can schedule when it runs. You can schedule a reporting snapshot to run daily, weekly, or monthly so that data from the source report is loaded into the target object when you need it.

### 5. Manage Reporting Snapshots

After you set up a reporting snapshot, you can view details about it and edit and delete it. From Setup, enter Reporting Snapshots in the Quick Find box, then select **Reporting Snapshots** to display the Reporting Snapshots page, which shows the list of reporting snapshots defined for your organization.

### 6. Troubleshoot Reporting Snapshots

The Run History section of a reporting snapshot detail page displays if a reporting snapshot ran successfully or not. When a reporting snapshot fails during a scheduled run, the failure is noted in the Result column. To view the details of a run, click the date and time of the run in the Run Start Time column.

#### SEE ALSO:

Build a Salesforce Classic Dashboard

Create a Custom Report in Accessibility Mode

# Prepare Reporting Snapshots

To set up a reporting snapshot, you need a source report and a target object with fields to contain the data in the source report.

To set up a reporting snapshot:

- 1. Create a new custom report that includes the fields you want to load as records into a target object.
- **2.** Create a new custom object in which to store the records loaded from the source report.
- **3.** Create fields on the target object that will receive the source report's results when the reporting snapshot runs.

# **Tips on Source Reports for Reporting Snapshots**

- If you save a tabular source report with its details hidden, the report will not be available to
  include in a reporting snapshot. Furthermore, if you hide the details of a tabular source report
  included in a reporting snapshot, the reporting snapshot will fail when it runs. To verify that
  the details of the tabular source report are not hidden, view the report, click **Show Details**, and
  save the report. The **Show Details** button only displays if the report's details are hidden.
- When creating the source report for your reporting snapshot, note the names of the fields you
  added to the report, as those field names may be useful to you when you create fields on the
  target object in which to store the report results.
- You can choose any custom tabular or summary report as the source report, except legacy
  forecast reports, Quota vs Actual reports, and Leads by Source reports. The Source Report
  drop-down list does not display standard reports..
- You can include up to 100 fields in your source report.
- You can delete the schedule of when a reporting snapshot runs. You can't stop or pause a reporting snapshot when it is running, nor can you delete its source report. To delete the source report, you must first remove the report from the reporting snapshot by changing the report in the Source Report drop-down list..

# **EDITIONS**

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Essentials, Professional, Enterprise, Performance, Unlimited, and Developer Editions

# **USER PERMISSIONS**

To create, save, and schedule a reporting snapshot:

 Manage Reporting Snapshots

To run a reporting snapshot as a running user and add the results to a custom object, the running user must have:

Run Reports

AND

Create on the target object

- If you select Load No Data in the Fields from Source Report column, no data will load into the corresponding field in the Fields in Target Object column when the reporting snapshot runs. .
- The (No fields with compatible data type) field displays in the Fields from Source Report column when a field on the target object does not match the data type of a field on the source report..

### **Tips on Target Objects for Reporting Snapshots**

Consider the following when setting up target objects for reporting snapshots:

• In Professional, Enterprise, Unlimited, Performance, and Developer Editions, use field-level security to make the target object's fields visible to the appropriate users.

- You can't delete a custom object if it's a target object in a reporting snapshot.
- The fields on the target object determine field mapping availability. For example, your source report may include ten fields, but if your target object includes one field, then you can only map one field in your reporting snapshot.
- You can add up to 100 fields to the target object.
- Target objects cannot contain validation rules or be included in a workflow.
- Reporting snapshots cannot contain target objects that trigger Apex code to run when new records are created..
- When a reporting snapshot runs, it can add up to 2,000 new records to the target object. If the source report generates more than 2,000 records, an error message is displayed for the additional records in the Row Failures related list. You can access the Row Failures related list via the Run History section of a reporting snapshot detail page.

## **Tips on Reporting Snapshots**

- Be aware of the type of license your Running User has. For example, if the Running User of a reporting snapshot has a Salesforce license, users who have Lightning Platform or Salesforce Platform One licenses will not be able to view it. Alternatively, if the Running User has a Lightning Platform or Salesforce Platform One license, users who have Salesforce licenses will be able to see the reporting snapshot. If you have users with Lightning Platform or Salesforce Platform One licenses, we recommend creating a separate reporting snapshot for them with a Running User that has a Lightning Platform or Salesforce Platform One user license.
- You can only map fields with compatible data types. For example, you can map a currency field to a number field.
- If you change the source report or target object on a reporting snapshot with existing field mappings, the field mappings are deleted when you save the reporting snapshot. You can also view Summary Fields in Source Report and Fields in Target Object to see the number of summary or target fields, respectively..
- You must map at least one field from the source report to one field on the target object or data will not load from the source report to the target object when the reporting snapshot runs.
- When a reporting snapshot is defined, deleted, or its source report or target object is changed, it is tracked in your organization's setup audit trail history.
- The Run History section on a reporting snapshot detail page displays details on when the reporting snapshot ran. Details include:
  - The date and time at which the reporting snapshot ran
  - The name of the source report, target object, and running user
  - The time it took for the reporting snapshot to run
  - The total number of detail or summary rows in the source report, depending on the report type
  - The number of records created in the target object
  - Whether or not the reporting snapshot ran successfully

#### SEE ALSO:

Report on Historical Data with Reporting Snapshots Create a Custom Report in Accessibility Mode

Define a Reporting Snapshot

After you create a source report, target object, and target object fields, you can define your reporting snapshot. You define a reporting snapshot by naming it and choosing the source report that will load report results into the target object you specify when the reporting snapshot runs.

 From Setup, enter "Reporting Snapshots" in the Quick Find box, then select Reporting Snapshots.

### 2. Click New Reporting Snapshot.

- 3. Enter a name, unique name, and description for your reporting snapshot.
- 4. Choose a user in the Running User field by clicking the lookup icon.

The user in the Running User field determines the source report's level of access to data. This bypasses all security settings, giving all users who can view the results of the source report in the target object access to data they might not be able to see otherwise.

Only users with the "Modify All Data" permission can choose running users other than themselves.

5. Select a report from the Source Report drop-down list.

The report you choose determines the report results that will load as records into the target object when the reporting snapshot runs.

You can choose any custom tabular or summary report as the source report, except legacy forecast reports, Quota vs Actual reports, and Leads by Source reports. The Source Report drop-down list does not display standard reports.

6. Select a custom object from the Target Object drop-down list.

The custom object you choose will receive the source report's results as records when the reporting snapshot runs.

If a record used for an reporting snapshot has no record type associated with it, the record type of the running user is associated with the reporting snapshot by default.

- 7. Click **Save** to save the definition of your reporting snapshot, or click **Save & Edit Field Mappings** to save your reporting snapshot and map its fields.
- **8.** Map the fields on the source report to the fields on the target object.

SEE ALSO:

**Standard Report Types** 

# **EDITIONS**

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Essentials, Professional, Enterprise, Performance, Unlimited, and Developer Editions

# **USER PERMISSIONS**

To create, save, and schedule a reporting snapshot:

Manage Reporting Snapshots

To run a reporting snapshot as a running user and add the results to a custom object, the running user must have:

Run Reports

AND

Create on the target object

Map Reporting Snapshot Fields

After you create a source report, target object, target object fields, and define your reporting snapshot, you can map the fields on your source report to the fields on your target object. You map source report fields to target object fields so that when the report runs, it automatically loads specific target object fields with data from specific source report fields.

- From Setup, enter Reporting Snapshots in the Quick Find box, then select Reporting Snapshots.
- 2. Select the name of the reporting snapshot whose fields you want to map.
- 3. Click **Edit** on the Field Mappings section.
- **4.** For summary reports, select the Grouping Level at which summary data is extracted from the source report. Data loaded into the target object is taken from summary fields at the grouping level you specify. The Grand Summary summarizes on the total for all grouping levels.
- 5. In the Fields from Source Report column, click a Load No Data drop-down list and select a field from the source report to map to a custom object field in the Fields in Target Object column. Only summary fields can be mapped for reporting snapshots based on summary reports. Note that the fields for summary reports may vary depending on the grouping level selected.
- **6.** Click **Quick Save** to save field mappings and continue mapping fields, or click **Save** to save field mappings and return to the reporting snapshot's detail page.
- **7.** Next, schedule the reporting snapshot to run.

### **Considerations for Mapping Reporting Snapshot Fields**

- You must map at least one field from the source report to one field on the target object or data will not load from the source report to the target object when the reporting snapshot runs.
- You can only map fields with compatible data types. For example, you can map a currency field to a number field.
- A custom summary formula can be mapped only if the grouping level in the reporting snapshot and the grouping level in the custom summary formula match.
- If you select Load No Data in the Fields from Source Report column, no data will load into the corresponding field in the Fields in Target Object column when the reporting snapshot runs..
- The (No fields with compatible data type) field displays in the Fields from Source Report column when a field on the target object does not match the data type of a field on the source report.
- The fields on the target object determine field mapping availability. For example, your source report may include ten fields, but if your target object includes one field, then you can only map one field in your reporting snapshot.
- You cannot map fields from the source report to the following fields on the target object: Created By, Last Modified By, Created Date, and Last Modified Date.
- When you map fields from the source report to the target object, some data may lose its context when loaded to the target object. For example, if you map a date and time field from the source report to a text field on the target object, the date and time load to the target object without the time zone.
- When executing a reporting snapshot, if the running user does not have "read" or "write" access to a mapped field in the target object, that field is dropped from the mapping, but does not cause the execution to fail. If a required field in the target object is not mapped, the execution fails. To ensure that fields are always mapped, make them required or set default values for them.

# **EDITIONS**

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Essentials, Professional, Enterprise, Performance, Unlimited, and Developer Editions

# **USER PERMISSIONS**

To create, save, and schedule a reporting snapshot:

Manage Reporting Snapshots

To run a reporting snapshot as a running user and add the results to a custom object, the running user must have:

Run Reports

AND

Create on the target object

• To map a field in the source report to a lookup field on the target object, you must map to the ID of the object associated with the lookup. For example, to map to an opportunity lookup field, you must map to the Opportunity ID. To get the Opportunity ID in the source report, you may need to use a custom report type to include ID and other related fields.

#### SEE ALSO:

Report on Historical Data with Reporting Snapshots Add a Summary Formula Column to a Report

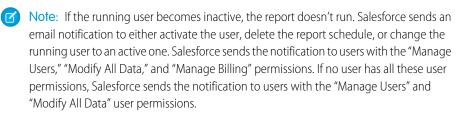
### Schedule and Run a Reporting Snapshot

After you create a source report, target object, target object fields, define your reporting snapshot, and map its fields, you can schedule when it runs. You can schedule a reporting snapshot to run daily, weekly, or monthly so that data from the source report is loaded into the target object when you need it.

The number of reporting snapshots you can schedule to run is determined by your Edition. After a reporting snapshot has run, you can send an email notification to yourself and other users that includes details about the reporting snapshot run, such as the date and time it ran, whether it ran successfully, and how many records were loaded into the target object from the source report. Also, the notification includes a link to the reporting snapshot detail page in Salesforce.

- From Setup, enter "Reporting Snapshots" in the Quick Find box, then select Reporting Snapshots.
- 2. Select the name of the reporting snapshot that you want to schedule to run.

Reporting snapshots will not run as scheduled if the user in the Running User field does not have access to the folder in which the source report is stored.



3. Click **Edit** on the Schedule Reporting Snapshot section.

The Schedule Reporting Snapshot section on a reporting snapshot detail page displays details on when the reporting snapshot is scheduled to run.

- **4.** Select a notification setting to send an email when the reporting snapshot finishes running:
  - Click Me to send an email to the email address specified on your Salesforce user record.
  - Click Others... to send an email to additional users. You can only send reporting snapshot notifications to email addresses included on Salesforce user records. You can only select Users and Public Groups in the Search drop-down list. You can only share with internal users, not external users (such as community users).
- **5.** Schedule the reporting snapshot to run:
  - In the Frequency field, select the frequency at which the reporting snapshot runs. When you click the Daily, Weekly, or Monthly fields, more options display that allow you to refine frequency criteria.

If you schedule a reporting snapshot to run on a specific day of every month, the reporting snapshot will only run on months that have that specific day. For example, if you schedule a reporting snapshot to run on the 31st day of every month, then the

# **EDITIONS**

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Essentials, Professional, Enterprise, Performance, Unlimited, and Developer Editions

# **USER PERMISSIONS**

To create, save, and schedule a reporting snapshot:

 Manage Reporting Snapshots

To run a reporting snapshot as a running user and add the results to a custom object, the running user must have:

Run Reports

AND

Create on the target object

reporting snapshot will only run on months that have 31 days. If you want a reporting snapshot to run on the last day of every month, choose last from the On day of every month drop-down list.

- In the Start and End fields, specify the dates during which you wish to schedule the reporting snapshot to run.
- In the Preferred Start Time drop-down list, click the **Find available options...** link to choose a preferred start time for the reporting snapshot to run.
  - Your preferred start time may not be available if other users have already selected that time to run a reporting snapshot or your organization has reached its reporting snapshot limit.
  - Reporting snapshots run in the time zone of the user who schedules the run. For example, if the Time Zone field on your user record is set to Pacific Standard Time, and you schedule a reporting snapshot to run every day at 2:00 PM, then the reporting snapshot will run every day at 2:00 PM Pacific Standard Time.
  - If you view and save a schedule in a time zone different from the one in which it was previously scheduled, the time slot could potentially change.
  - The reporting snapshot runs within an hour of the time you select in the Preferred Start Time drop-down list. For example, if you select 2:00 PM as your preferred start time, the reporting snapshot may run any time in between 2:00 PM or 2:59 PM, depending on how many other reporting snapshots are scheduled to refresh at that time.
- **6.** Click **Save** to schedule the reporting snapshot to run.

When the reporting snapshot runs, it adds new records to the target object.

Optionally, once you have scheduled a reporting snapshot to run, you can perform the following actions after you click **Edit** on the Schedule Reporting Snapshot section of a reporting snapshot detail page:

- Click **Edit** to update the notification and frequency settings of the reporting snapshot.
- Click **Delete** to permanently delete the existing schedule of when the reporting snapshot runs.

A reporting snapshot will fail during a scheduled run if:

- The source report includes more than 100 fields
- The source report was changed from summary to tabular
- The selected grouping level for a summary source report is no longer valid
- The running user does not have access to the source report
- The running user does not have the "Run Reports" permission
- The target object has more than 100 custom fields
- The target object contains validation rules
- The target object is included in a workflow
- The target object is a detail object in a master-detail relationship
- The target object runs an Apex trigger when new records are created on it
- The running user does not have the "Create" permission on the target object. Note that if the target object's status is In Development, the running user must have the "Customize Applications" permission.

Manage Reporting Snapshots

After you set up a reporting snapshot, you can view details about it and edit and delete it. From Setup, enter Reporting Snapshots in the Quick Find box, then select Reporting **Snapshots** to display the Reporting Snapshots page, which shows the list of reporting snapshots defined for your organization.

From the Reporting Snapshots page, you can:

- Select a list view from the View drop-down list to go directly to that list page, or click **Create** New View to define your own custom view.
- Define a new reporting snapshot by clicking **New Reporting Snapshot**.
- Update the reporting snapshot name, description, running user, source report, and target object by clicking **Edit** next to its name. Only users with the "Modify All Data" permission can choose running users other than themselves. If you have the "Customize Application" permission, enter a unique name to be used by the API and managed packages.

If you change the source report or target object on a reporting snapshot with existing field mappings, the field mappings are deleted when you save the reporting snapshot. You can also view Summary Fields in Source Report and Fields in Target Object to see the number of summary or target fields, respectively.

- Delete a reporting snapshot by clicking **Del** next to its name. After the reporting snapshot is deleted, it cannot be restored from the Recycle Bin.
  - **Important**: When you delete a reporting snapshot, the source report and target object aren't deleted; however, when the source report runs, it won't load the target object with

You can delete the schedule of when a reporting snapshot runs. You can't stop or pause a reporting snapshot when it is running, nor can you delete its source report. To delete the source report, you must first remove the report from the reporting snapshot by changing the report in the Source Report drop-down list.

Display detailed information about a reporting snapshot and customize it further by clicking

# its name. Then you can:

- Click links in the Identification section that redirect you to the reporting snapshot running user, source report, and target object. In addition, you can view the preferred date and time at which the reporting snapshot will approximately run next in the Next Run field, and view the date and time at which it last ran in the Last Run field.
- Click **Edit** in the Field Mappings section to further customize the fields mapped from the source report to the target object.

The Reporting Snapshot Field Mappings section displays which source report fields are mapped to the target object's fields. You can view the number of fields in the source report available for mapping to the target object in the Columns in Source Report field. Also, you can view the number of fields available for mapping in the target object in the Fields in Target Object field.

Click **Edit** in the Schedule Reporting Snapshot section to schedule when to run the reporting snapshot. The Schedule Reporting Snapshot section displays details about when the reporting snapshot is currently scheduled to run.

- The Run History section displays details about when the reporting snapshot ran. Details include:
  - The date and time at which the reporting snapshot ran
  - The name of the source report, target object, and running user
  - The time it took for the reporting snapshot to run

# **EDITIONS**

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Essentials. Professional, Enterprise, Performance, Unlimited, and **Developer** Editions

# **USER PERMISSIONS**

To create, save, and schedule a reporting snapshot:

Manage Reporting **Snapshots** 

To run a reporting snapshot as a running user and add the results to a custom object, the running user must have:

**Run Reports** 

AND

Create on the target object

• The total number of detail or summary rows in the source report, depending on the report type

- The number of records created in the target object
- Whether or not the reporting snapshot ran successfully

Up to 200 records are stored in the Run History section. After 200 records are stored, the oldest record is automatically deleted and cannot be retrieved from the Recycle Bin.

#### SEE ALSO:

Report on Historical Data with Reporting Snapshots

### Troubleshoot Reporting Snapshots

The Run History section of a reporting snapshot detail page displays if a reporting snapshot ran successfully or not. When a reporting snapshot fails during a scheduled run, the failure is noted in the Result column. To view the details of a run, click the date and time of the run in the Run Start Time column.



### 🎧 Tip:

- If the Total Row Number is blank, the run failed before the report was completed (for example, the report was invalid or the running user is inactive).
- When a reporting snapshot runs, it can add up to 2000 new records to the target object. If there are more than 2000 new records, the additional records are not recorded, and the notification indicates that some rows failed.
- The details of a failed run are available on the Row Failures related list for 14 days before they are automatically deleted. You cannot retrieve details about row failures from the Recycle Bin.
- If you have a unique field in the target object, and records in the report have more than one of the same value in the column mapped to that unique field, duplicate records are not added. The run history indicates when records are not added to the reporting snapshot.
- If field mappings failed, the snapshot still runs, but the run history shows that there was a partial error.

A reporting snapshot could fail during a scheduled run for a number of reasons. This table lists the errors a failed run may display and how the errors can help you troubleshoot the reporting snapshot so that it will run successfully.

#### Running user does not have permission to run reports.

The user in the Running User field does not have the "Run Reports" or "Create and Customize Reports" permission. Choose a user with the appropriate permissions or enable the appropriate permissions for the running user.

# Cannot run reporting snapshot because source report has been deleted.

The report in the Source Report field was deleted and no longer available to run. Choose another source report for your reporting snapshot or restore the deleted report from the Recycle Bin.

# Running user does not have permission to access source report.

The user in the Running User field does not have access to the folder in which the source report is stored. Choose a user with access to the source report or provide the existing running user with access to the folder in which the source report is stored.

# **EDITIONS**

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Essentials, Professional, Enterprise, Performance, Unlimited, and Developer Editions

# **USER PERMISSIONS**

To create, save, and schedule a reporting snapshot:

 Manage Reporting Snapshots

To run a reporting snapshot as a running user and add the results to a custom object, the running user must have:

Run Reports

AND

Create on the target object

#### Source report definition is obsolete.

The report in the Source Report field references a custom or external object that is no longer available for reports or the relationships between the objects in the report have changed.

#### Source report definition is invalid.

The report in the Source Report field cannot run because it contains invalid formulas or filter criteria. Update the report so that it can run without errors.

### Running user does not have permission to access report type.

The user in the Running User field does not have permission to access a report type associated with the report in the Source Report field. Choose a running user that has the correct permissions or provide the existing running user with the appropriate permissions.

#### Source report must be tabular.

The report in the Source Report field is no longer in tabular format. Choose a new source report or update the existing source report's format to tabular.

# Source report last saved with details hidden on report results.

The report in the Source Report field was saved with its details hidden. To display the details of the source report, view the report, click the **Show Details** button, and save the report.

#### Target object has been deleted or is inaccessible to running user.

The custom object in the Target Object field has been deleted or the user in the Running User field does not have permission to access the target object. Restore the deleted custom object, choose a new target object, or provide the existing running user with "Create" permissions to the custom object in the Target Object field. Note that if the custom object's status is In Development, the running user must have the "Customize Application" permission to access the target object.

#### Running user does not have permission to edit target object.

The user in the Running User field does not have "Create" permissions on the custom object in the Target Object field. Choose a running user that has such permissions or provide the existing running user with "Create" permissions to the custom object in the Target Object field.

### Target object must not be a detail object in a master-detail relationship.

The custom object in the Target Object field is a detail object in a master-detail relationship, meaning that a master object controls certain behaviors on the target object's records. Choose a target object that is not included in a master-detail relationship.

#### Target object must not be included in a workflow.

The custom object in the Target Object field is included in a workflow. Choose a target object that is not included in a workflow.

#### Target object must not include an insert trigger.

An Apex trigger runs when new records are created for the custom object in the Target Object field. Remove the Apex trigger or choose a target object for which an Apex trigger does not run when new records are created.

#### Target object must not include validation rules.

The custom object in the Target Object field contains validation rules. Choose a target object that does not contain validation rules or delete validation rules from the existing target object.

### Running user is inactive.

The user in the Running User field is no longer active. Choose an active user.

# One or more required fields on the target object are not mapped.

One or more required fields on the target object are not mapped. Map all required fields on the target object to fields on the source report.

Source report contains too many fields, has a formula field with too many functions, or contains too many criteria.

The report in the Source Report field contains too many fields, criteria, or functions within a formula field. Remove any unnecessary fields, criteria and functions within formula fields from the source report.

#### Source report cannot have more than 100 selected columns.

The report in the Source Report field contains more than 100 fields. Remove any unnecessary fields from the source report.

#### Target object cannot have more than 100 custom fields.

The custom object in the Target Object field contains more than 100 custom fields. Remove any unnecessary fields from the target object.

#### Your report exceeded the time limit for processing.

The report in the Source Report field may contain too much data to process. Reduce the amount of data the report processes when running by limiting the report's date range and remove any unnecessary fields from the source report.

### This Reporting Snapshot Unique Name already exists. Please choose a unique name.

The new snapshot you are trying to create has the same unique name as that of a existing snapshot.

#### A summary field did not return a valid number.

A summary field in the results has not returned a valid number. For example, the field may have attempted to divide by 0. Check your formulas and test for 0 and "null" in calculations if they appear in your data.

There is a problem with this reporting snapshot. The source report format was changed from tabular to summary. The field mappings in the reporting snapshot are no longer correct. You can change the report format back to tabular or update the field mappings in the snapshot definition.

The source report format was changed from tabular to summary, which made the field mappings in the reporting snapshot incorrect. To fix this error, either change the report format back to tabular or update the field mappings in the snapshot definition. This error only applies to reporting snapshots with summary reports.

There is a problem with this reporting snapshot. Source report must be tabular or summary.

The source report format must be either tabular or summary. Matrix reports cannot be used with reporting snapshots.

The grouping level you specified in the reporting snapshot is no longer valid. The running user may no longer have access to that field, the grouping level may have been removed from the source report, or the grouping level was never set.

This error may result when the running user no longer has access to the field specified in the grouping level, or the grouping level was removed from the source report or was never set. This error only applies to reporting snapshots with summary reports. Make sure the running user has access to all necessary fields.

SEE ALSO:

Creating a Custom Report

# Report Type Reference

The report type you choose determines which records and fields appear in your report. For example, the Opportunities report type gives you access to Opportunity records and fields like Amoung, Stage and Opportunity Owner.

There are two kinds of report types: standard report types and custom report types.

Standard report types give you access to most Salesforce data. For example, the Opportunities report type gives you access to Opportunity records and fields. If you're going to report on Opportunity Amounts or Probability, then Opportunities is the report type for you.

Custom report types give you access to custom objects in Salesforce, or custom views of standard objects (like Opportunities), which your administrator configures. For example, your administrator can create a custom report type which gives access to Opportunities, plus related fields from Products. That way, you can report on Opportunities for a given product.

#### IN THIS SECTION:

#### **Standard Report Types**

Salesforce provides a rich collection of standard report types that you can tailor to your unique requirements. You rarely need to create a brand-new report.

### **Pre-Designed Custom Report Types**

Some Salesforce features come with custom report types that are designed for you in advance, so you don't have to create a new report.

# **Standard Report Types**

Salesforce provides a rich collection of standard report types that you can tailor to your unique requirements. You rarely need to create a brand-new report.



Tip: You may not see some of these folders if your administrator has customized the visibility of the Report tab folders.

If you can't find a report to customize for your own needs, you can also create a new custom report to access exactly the right information.

#### IN THIS SECTION:

# 1. Account and Contact Reports

Use account and contact reports to learn about active, neglected, or new accounts, as well as accounts by account owner or partner. The two standard contact reports let you create a mailing list of contacts or track opportunities by contact role.

# 2. Activity Reports

Activity reports are useful for gathering information about open activities, completed activities, multi-person events, or pending approval requests for which you are a delegated approver.

#### 3. Administrative Reports

Administrative reports help you analyze your Salesforce users, documents, and pending approval requests. You can report on the active Salesforce users and see who has been logging in.

# 4. Campaign Reports

Use campaign reports to analyze your marketing efforts. You can report on the ROI of your campaigns, track who you targeted with your campaigns and who has responded, or analyze which opportunities resulted from your campaigns.

#### 5. File and Content Reports

Run File and Content reports to analyze how users are engaging with files and Salesforce CRM Content.

# 6. Forecast Reports

Forecast reports give you information about your customizable forecast data.

#### 7. Lead Reports

Use lead reports to show information about the source and status of leads, how long it takes to respond to leads, neglected leads, and the history of lead fields.

# **EDITIONS**

Available in: both Salesforce Classic and Lightning Experience

Available in: **All** Editions except **Database.com** (The edition determines which reports you see.)

# **USER PERMISSIONS**

### To run reports:

Run Reports

To schedule reports:

Schedule Reports

To create, edit, and delete reports:

 Create and Customize Reports

AND

Report Builder

# 8. Opportunity Reports

Opportunity reports provide information about your opportunities, including owners, accounts, stages, amounts, and more. The default settings show you the most commonly used information from each object, but you can customize a report to view other information, such as primary campaign source, forecast category, and synced quote.

#### 9. Product and Asset Reports

Use product and asset reports to view information about the products your users currently have installed. Find out what assets your customers have, list the cases filed for a particular asset, or identify assets that aren't associated with a product.

#### 10. Self-Service Reports

Self-Service reports help you analyze the effectiveness of your Self-Service portal. Find out how many cases are being viewed, how many customers are logging in, or what customers think of the solutions you're offering.

# 11. Reporting on Support Activity

Use support reports to track the number of cases created, case comments, case emails, case owners, case contact roles, cases with solutions, the length of time since the case last changed status or owner, and the history of cases.

#### SEE ALSO:

Search for Reports and Dashboards from the Reports Tab in Salesforce Classic Creating a Custom Report

# Account and Contact Reports

Use account and contact reports to learn about active, neglected, or new accounts, as well as accounts by account owner or partner. The two standard contact reports let you create a mailing list of contacts or track opportunities by contact role.

### **Standard Report: Field History**

If your organization tracks field history on accounts or contacts, you can report on that information using the account history or contact history report.

# **Standard Report: Person Accounts**

If your organization uses person accounts, fields specific to person accounts are available and prefixed with Person Account: in account reports. In addition, you can include the Is Person Account field in both account and contact reports. Your administrator may have given a different label to Person Account.

#### Mass Mail Merge

You can also create a report of your contact information, export that data to Microsoft® Excel®, and then do a mass mail merge using Microsoft® Word®.

# **View Filter for Account Reports**

The standard View filter for account reports allows you to limit your account data according to the following options. These options vary depending on your organization's edition and setup.

- My accounts: Shows accounts that you own.
- My account team accounts: Shows accounts where you are on the account team.
- My account team and my accounts: Shows accounts you own and those where you are on the account team.
- My team's accounts: Shows your accounts and accounts owned by all of your subordinates in the role hierarchy.
- My territories: For organizations that use territory management, this option shows accounts that belong to the territories to which you are assigned.
- My territory team's accounts: For organizations that use territory management, this option shows accounts that belong to your territories and your territories' descendants.

• My team's account team and their own accounts: For users who report to you in the role hierarchy, shows accounts they own or for which they are on the account team.

- All visible accounts: Shows all accounts that you can view, as determined by your sharing model.
- Territories: For organizations that use previous versions of territory management (not Enterprise Territory Management), the
  additional Territories filter can be set to All, Multiple Territories, or Missing Territory. In custom report types, when using
  the Territories filter that includes territories, Multiple Territories or Missing Territories are not shown in the report results.
- Customer Portal: If your organization uses a Salesforce Customer Portal, add the Customer Portal Account field to your account reports to view which accounts have contacts enabled to use the portal.

#### SEE ALSO:

# **Limit Report Results**

#### **Activity Reports**

Activity reports are useful for gathering information about open activities, completed activities, multi-person events, or pending approval requests for which you are a delegated approver.

Standard activity reports allow you to select the date range and status of the activities you want included. The standard activity reports list your tasks and appointments for a selected date range or events with all invitees.

You can also create custom reports for activities by clicking the Reports tab, **New Report**, and choosing **Activities** as the type of data on which to report.



**Note:** Click **Show Hierarchy** to see your org's role hierarchy above the report results. You can use the role hierarchy to share report data with people at different levels in the hierarchy. For example, if you see **CEO > VP of Global Sales > Sales Operations Director**, you're viewing data for the Sales Operations Director role. Click any role name to see and share the data that's visible to people in that role.

#### **Special Features of Activity Reports**

Consider the following when running activity reports:

#### **Standard Reports**

- Choose the HTML Email Status report if you have the HTML email tracking enabled. This reports on anything in the HTML Email Status related list of your leads and contacts.
- Choose the Events with Invitees report to include only multi-person events in your report. The standard filters for events with invitees are:
  - Assigned to...—Shows only multi-person events that you own.
  - Assigned to the team of...—Shows multi-person events that anyone in your team owns.
  - Invitee is...—Shows only multi-person events that list you as an invitee.
  - Invitee is in the team of...—Shows the multi-person events that show anyone on your team as an invitee.
- The My Delegated Approval Requests report lists all the approval requests for which you are the approval proxy. Note that the All Pending Approval Requests report is listed in the Activity Reports folder.
- In Professional, Enterprise, Unlimited, Performance, and Developer Edition organizations, to show the activities for users who report to you, use the **Hierarchy** links in the Tasks and Appointments report. Note that you can view only your own activities and activities owned by users below you in the role hierarchy.
- If your organization uses Shared Activities, reports (including custom report types and Tasks and Events reports) display different results depending on your permissions. Say you're reporting on events, and your report results include an event that is related

to two or more contacts and also has invitees. If you're an administrator, your report results show an event for the primary contact plus a separate event for each invitee. If you're not an administrator, your report results show just one event, for the primary contact.

# **Report Types**

- Using report builder, you can create activity reports that show activities related to another type of record. For example, a custom Activities with Leads report shows activities associated with leads.
- Activities with Leads reports do not display data for the Address Line 1, Address Line 2, and Address Line 3 fields.

# **Tips for Activity Reports**

- Set a search criteria of "Event Invitation equals 0" to filter out events that are meeting invites sent to users for a multi-person event
- Archived activities aren't included in reports. Events and closed tasks older than a year are archived. However, open tasks aren't
  archived. You can still see archived activities for a record by selecting View All in the Activity History section of a
  record's detail page.
- Activities for private contacts are displayed only in reports for the contact owner.
- The standard filters for activity reports allow you to limit your report results using the following options. Some of these options will not be visible depending on your edition.
  - My Activities—Shows activities that you own.
  - My Delegated Activities—Shows activities that you created but are owned by someone else in the same role as you, and below your role, in the role hierarchy.
  - My Team's Activities—Shows activities owned by users who report to you in the role hierarchy.
  - All Activities—Shows all activities that you can view, as determined by your sharing model.
- If you receive an error message that your activity report has too many results, customize the report to include a filter on a picklist, text, or date field. Alternatively, rerun the report using a different activity data type such as "Activities with Accounts" or "Activities with Opportunities."

### SEE ALSO:

### **Limit Report Results**

#### Administrative Reports

Administrative reports help you analyze your Salesforce users, documents, and pending approval requests. You can report on the active Salesforce users and see who has been logging in.



**Note:** You can see the Administrative Reports folder on the Reports tab only if you have the "View Setup and Configuration" permission. You don't need this permission to view the Administrative Reports report type—all users can view it and manage any document reports associated with that type. To view other types of reports associated with that type, such as user and approval request reports, you must have the permission.

#### **Special Features of Administrative Reports**

Consider the following when running administrative reports:

# **Standard Reports**

• The All Active Users report lists the active users in your organization and when they last logged in.

# **EDITIONS**

Available in: both Salesforce Classic and Lightning Experience

Available in: Contact Manager, Group, Professional, Enterprise, Performance, Unlimited, and Developer Editions

• The Users Logged in This Week report lists all of the users who have logged in to Salesforce in the past seven days. If Communities is enabled, you can add a Community column so that you can see which communities users have logged in to as well.

- The Documents report lists the documents within each document folder.
- The All Pending Approval Requests report lists the approval requests awaiting approval for each approval process. Note that the My Delegated Approval Requests report is listed in the Activity Reports folder.
- If your organization uses territories, the User Territory Report in the Territory Reports folder summarizes the territories to which users have been assigned.

### **Report Types**

- Create a custom report that lists your organization's reports and the last time each report was used. Choose Administrative Reports and select Reports as the report type.
- If your organization uses Communities, you can report on login history for external members of your communities.
  - 1. Create a custom report.
  - 2. Choose Administrative Reports.
  - **3.** Select Users as the report type.
  - **4.** Add Community to your report columns.
  - 5. Add a filter that includes profiles of community users.
- If your organization uses a Salesforce Customer Portal, you can report on Customer Portal users:
  - 1. Create a custom report.
  - 2. Choose Administrative Reports.
  - **3.** Select Users as the report type.
  - **4.** Add License Type, Profile, and Role to your report columns. You can't report on roles for high-volume portal users because they don't have roles.
    - Note: Permission sets aren't supported.

You can also add the Customer Portal Account field to your account reports to view which accounts have contacts enabled to use the portal.

• You can create custom report types from which users can report on your organization's reports and dashboards. When defining a custom report type, select Reports or Dashboards from the Primary Object drop-down list on the New Custom Report Type page.

### **Tips for Administrative Reports**

• Users with the "Manage Internal Users" permission can create a custom user report that lists the details of users' login attempts. The relevant fields—such as Login Date/Time, Source IP Address, and Login Status—are grouped in the Login History section of the Select Columns step. Note that the Client Type field shows whether the user logged in via a Web browser or an alternate interface such as Connect for Lotus Notes or a partner portal. You can also see which users have never logged in by setting report criteria: choose the Login Date/Time field and the "equals" operator and leave the third value blank.

### SEE ALSO:

**Limit Report Results** 

#### Campaign Reports

Use campaign reports to analyze your marketing efforts. You can report on the ROI of your campaigns, track who you targeted with your campaigns and who has responded, or analyze which opportunities resulted from your campaigns.

# **Special Features of Campaign Reports**

Consider the following when running Campaign Reports:

#### Standard Reports

- On the Campaign Detail custom report and the Campaign ROI Analysis report, you can include campaign-hierarchy statistics that provide aggregate values for a parent campaign and all the campaigns below it in the campaign hierarchy. If your campaigns include a custom picklist that indicates hierarchy level (for example, "tactic," "program," and "initiative"), you can run a report that summarizes data at any hierarchy level across all campaigns.
- Use the Campaign Leads or Campaign Contacts reports to list the leads or contacts associated with your campaigns.
- Use the Campaign Member Report for a list of campaign members by campaign.
- Use the Campaign Member Analysis report to summarize information about who has responded to campaigns.
- Use the Campaign Revenue Report to analyze which opportunities have resulted from your campaigns. In Enterprise, Unlimited, Performance, and Developer Editions, you can also analyze products, quantity schedules, and revenue schedules in this report.
- The Campaign ROI Analysis Report calculates the return on investment (ROI) and average costs for your campaigns. The ROI is calculated as the net gain (Total Value Won Opps - Actual Cost) divided by the Actual Cost. The ROI result is expressed as a percentage.
- Use the Campaigns with Influenced Opportunities report to view opportunities that have been influenced by multiple campaigns.



Note: The Campaigns with Influenced Opportunities report respects sharing rules on accounts, contacts, and campaigns. Objects with sharing rules set to private will not display in the report.

#### Report Types

- Use the Campaigns with Campaign Members custom report type to create a report that contains information about the leads and contacts on multiple campaigns. Use the Campaign Call Down report to see contacts and leads for a specific campaign. These reports are only available to users that have the "Read" permission on both contacts and leads.
- Use the Campaigns with Leads and Converted Lead Information report to view lead lifetime information sorted by a campaign or campaigns.
- Use the Campaigns with Influenced Opportunities report to view opportunities that have been influenced by multiple campaigns.

### **Tips for Campaign Reports**

- Some reports allow you to limit the data to one campaign by using the lookup icon to select a campaign. If the user running a report no longer has access to view the selected campaign, the report does not show any results. This report behavior is similar to what happens when a campaign is deleted.
- Member Status is the status of a lead or contact in reference to the campaign. The campaign owner can create up to 50 member status values. Sample Member Status values include, "Planned," "Sent," or "Attended." Additionally, you can now add the Member First Associated, Responded, and Member First Responded fields to campaign reports. These fields allow you to see the date the member was added to the campaign, whether the member responded to the campaign, and the date the member initially responded to the campaign.
- The Last Activity of a campaign is the most recent due date of an activity on the record. The following past or future activities set this date:
  - Any event

Closed tasks

#### SEE ALSO:

#### **Limit Report Results**

#### File and Content Reports

Run File and Content reports to analyze how users are engaging with files and Salesforce CRM Content.

#### **Standard File and Content Reports**

Run these prebuilt reports about files and content.

#### **Content Authors**

View how many files, content packs, Google Docs, and Web links each author has published in Salesforce CRM Content.

#### **Content Publication Time Frame**

Determine how many files, content packs, Google Docs, and Web links were published in a library during a given time frame.

#### **File and Content Downloads**

See which users downloaded what files, and when they downloaded the files.

# **File and Content Engagement**

See the number of times a file has been downloaded, shared, liked, and commented on.

#### File and Content Links

See which files users are sharing using content deliveries or **Share via link**. See when each link was created, when it expires, when it was last accessed, whether it is password protected, and the total number of times the link has been accessed. Each of the links in this report can be accessed by users outside of your organization.

#### **Library Administrators**

View the number of files, content packs, Google Docs, and Web links in each library as well as the total amount of file storage used by each library.

#### **Library Content**

View the number of files, content packs, Google Docs, and Web links in each library as well as the total amount of file storage used by each library.

#### **Most Content Downloads**

Determine which files and content packs are downloaded most frequently and which Web links and Google Docs are opened most frequently.

# **Most Content Subscriptions**

Determine which files, content packs, Google Docs, and Web links have the most subscribers.

#### Stale Content

Determine which files have not been downloaded or revised recently.

#### **File and Content Report Types**

Build standard reports about files and content.

# **Content Report**

Generate a report about Salesforce CRM Content.

| but does not permanently delete the file from Salesforce CRM Content. Archived files can be restored as needed.  Content Created By Contributor who published the file, content pack, Google Doc, or Web link.  Content ID Identifier that enables you to group by file rather than version. The Content Title is not guaranteed to be unique because multiple versions of the same file can have different ititles.  Content Published Date Date a file, content pack, Google Doc, or Web link was first published.  Content Title Title of a file, content pack, Google Doc, or Web link.  Record Type Title of the record type associated with the file, content pack, Google Doc, or Web link.  Featured Content Flag that indicates whether a piece of content is featured.  Individual Content Size Size of an individual file, exclusive of other versions of the same file.  (MB)  Last Subscribed Date Date on which the content was subscribed to most recently.  Num Downloads Number of times a file has been downloaded or the total number of downloads in a library. The number of times a Google Doc or Web link has been opened is also included in this count.  1 Tip: To see which users have downloaded a certain file, go to the file's content details page and click the Downloads tab.  Num Positive Ratings Number of thumbs-down votes.  Num Subscriptions Number of users who are subscribed to a file, content pack, Google Doc, or Web link, or the total number of subscriptions in a library.  Num Versions Number of times a new version of a file has been published.   | Field                   | Description  |
|--|-------------------------|--|
| Content ID Identifier that enables you to group by file rather than version. The Content Title is not guaranteed to be unique because multiple versions of the same file can have different titles.  Content Published Date Date a file, content pack, Google Doc, or Web link was first published.  Content Title Title of a file, content pack, Google Doc, or Web link.  Record Type Title of the record type associated with the file, content pack, Google Doc, or Web link.  Featured Content Flag that indicates whether a piece of content is featured.  Individual Content Size (MB)  Last Subscribed Date Date on which the content was subscribed to most recently.  Num Downloads Number of times a file has been downloaded or the total number of downloads in a library. The number of times a Google Doc or Web link has been opened is also included in this count.  Tip: To see which users have downloaded a certain file, go to the file's content details page and click the Downloads tab.  Num Positive Ratings Number of thumbs-down votes.  Num Positive Ratings Number of thumbs-down votes.  Num Subscriptions Number of users who are subscribed to a file, content pack, Google Doc, or Web link, or the total number of subscriptions in a library.  Num Versions Number of times a new version of a file has been published.  Overall Rating The number of positive votes minus the number of negative votes. For example, if a file has two positive votes and no negative votes, its Overall Rating is 2.  Tag Salesforce CRM Content tag assigned to a file, content pack, Google Doc, or Web link.  Total Content Size (MB) Size of a file, inclusive of all the file's versions.  Version Revised Date Date and time a new version of the file was published.  Version Revised By Contributor who published the file version.                  | Archived                | Flag that indicates whether a file has been archived. Archiving a file removes it from its library but does not permanently delete the file from Salesforce CRM Content. Archived files can be restored as needed. |
| not guaranteed to be unique because multiple versions of the same file can have different titles.  Content Published Date Date a file, content pack, Google Doc, or Web link was first published.  Content Title Title of a file, content pack, Google Doc, or Web link.  Record Type Title of the record type associated with the file, content pack, Google Doc, or Web link.  Featured Content Flag that indicates whether a piece of content is featured.  Individual Content Size Size of an individual file, exclusive of other versions of the same file.  (MB)  Last Subscribed Date Date on which the content was subscribed to most recently.  Num Downloads Number of times a file has been downloaded or the total number of downloads in a library. The number of times a Google Doc or Web link has been opened is also included in this count.  1 Tip: To see which users have downloaded a certain file, go to the file's content details page and click the Downloads tab.  Num Negative Ratings Number of thumbs-down votes.  Num Positive Ratings Number of thumbs-up votes.  Num Subscriptions Number of users who are subscribed to a file, content pack, Google Doc, or Web link, or the total number of subscriptions in a library.  Num Versions Number of times a new version of a file has been published.  Overall Rating The number of positive votes minus the number of negative votes. For example, if a file has two positive votes and no negative votes, its Overall Rating is 2.  Tag Salesforce CRM Content tag assigned to a file, content pack, Google Doc, or Web link.  Total Content Size (MB) Size of a file, inclusive of all the file's versions.  Version Revised Date Date and time a new version of the file was published.  Version Revised By Contributor who published the file version.  Library Name Name Name of the library. | Content Created By      | Contributor who published the file, content pack, Google Doc, or Web link.   |
| Content Title Title of a file, content pack, Google Doc, or Web link.  Record Type Title of the record type associated with the file, content pack, Google Doc, or Web link.  Peatured Content Flag that indicates whether a piece of content is featured.  Individual Content Size (MB)  Last Subscribed Date Date on which the content was subscribed to most recently.  Num Downloads Number of times a file has been downloaded or the total number of downloads in a library. The number of times a Google Doc or Web link has been opened is also included in this count.  Tip: To see which users have downloaded a certain file, go to the file's content details page and click the Downloads tab.  Num Negative Ratings Number of thumbs-down votes.  Num Positive Ratings Number of thumbs-up votes.  Num Subscriptions Number of subscriptions in a library.  Num Versions Number of times a new version of a file has been published.  Overall Rating The number of positive votes minus the number of negative votes. For example, if a file has two positive votes and no negative votes, its Overall Rating is 2.  Tag Salesforce CRM Content tag assigned to a file, content pack, Google Doc, or Web link.  Total Content Size (MB) Size of a file, inclusive of all the file's versions.  Version Revised Date Date and time a new version of the file was published.  Contributor who published the file version.  Library Name Name Name of the library.  | Content ID              | not guaranteed to be unique because multiple versions of the same file can have different  |
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| Num Subscriptions  Number of users who are subscribed to a file, content pack, Google Doc, or Web link, or the total number of subscriptions in a library.  Num Versions  Number of times a new version of a file has been published.  Overall Rating  The number of positive votes minus the number of negative votes. For example, if a file has two positive votes and no negative votes, its Overall Rating is 2.  Tag  Salesforce CRM Content tag assigned to a file, content pack, Google Doc, or Web link.  Total Content Size (MB)  Size of a file, inclusive of all the file's versions.  Version Revised Date  Date and time a new version of the file was published.  Version Revised By  Contributor who published the file version.  Library Name  Name of the library.   | Num Negative Ratings    | Number of thumbs-down votes.   |
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| Overall Rating  The number of positive votes minus the number of negative votes. For example, if a file has two positive votes and no negative votes, its Overall Rating is 2.  Tag  Salesforce CRM Content tag assigned to a file, content pack, Google Doc, or Web link.  Total Content Size (MB)  Size of a file, inclusive of all the file's versions.  Version Revised Date  Date and time a new version of the file was published.  Version Revised By  Contributor who published the file version.  Library Name  Name of the library.  | Num Subscriptions       | Number of users who are subscribed to a file, content pack, Google Doc, or Web link, or the total number of subscriptions in a library.  |
| two positive votes and no negative votes, its Overall Rating is 2.  Tag Salesforce CRM Content tag assigned to a file, content pack, Google Doc, or Web link.  Total Content Size (MB) Size of a file, inclusive of all the file's versions.  Version Revised Date Date and time a new version of the file was published.  Version Revised By Contributor who published the file version.  Library Name Name of the library.   | Num Versions            | Number of times a new version of a file has been published.  |
| Total Content Size (MB) Size of a file, inclusive of all the file's versions.  Version Revised Date Date and time a new version of the file was published.  Version Revised By Contributor who published the file version.  Library Name Name of the library.  | Overall Rating          | The number of positive votes minus the number of negative votes. For example, if a file has two positive votes and no negative votes, its Overall Rating is 2.   |
| Version Revised DateDate and time a new version of the file was published.Version Revised ByContributor who published the file version.Library NameName of the library.  | Tag                     | Salesforce CRM Content tag assigned to a file, content pack, Google Doc, or Web link.  |
| Version Revised By       Contributor who published the file version.         Library Name       Name of the library.   | Total Content Size (MB) | Size of a file, inclusive of all the file's versions.  |
| Library Name Name of the library.  | Version Revised Date    | Date and time a new version of the file was published.   |
| <u> </u>   | Version Revised By      | Contributor who published the file version.  |
| Library Created Date Date and time the library was created.  | Library Name            | Name of the library.   |
|  | Library Created Date    | Date and time the library was created.   |

# **Library and User Report**

Generate a list of users who are assigned to libraries.

| Field           | Description   |  |
|-----------------|---|--|
| Administrator   | Flag that indicates whether or not the user is a library administrator.                   |  |
| Group           | Flag that indicates whether or not the library member is a single user or a public group. |  |
| Library Created | Date and time the library was created.  |  |
| Library Name    | Name of the library.  |  |
| Member Name     | First and last name of the library member.  |  |

# **File and Content Report**

Generate a report about files uploaded to your organization.

| Field              | Description   |
|--------------------|---|
| Archived           | Flag that indicates whether or not a file has been archived. Archiving a file removes it from its library but does not permanently delete the file from Salesforce CRM Content. Archived files can be restored as needed. |
| Title              | Title of a file, content pack, Google doc, or Web link.   |
| Created By         | User who uploaded the file, content pack, Google Doc, or Web link.  |
| Download Date      | Date of the first file download.  |
| Downloaded By      | User who downloaded the file.   |
| Download User Type | Profile type of the user who download the file.   |
| File Type          | MIME type of the uploaded file.   |
| ID                 | Identifier that enables you to group by file rather than version. The Title is not guaranteed to be unique because multiple versions of the same file can have different titles.  |
| Last Revised By    | Last user to edit or upload a new version of the file.  |
| Last Revised Date  | Date of last file revision.   |
| Likes              | Number of times file posts have been liked. This number doesn't count likes applied to comments on the file post.   |
| Links              | Number of external file links that have been generated. External links are generated when a user shares a file using <b>Share via link</b> or when a user shares content from a library using a content delivery.         |
| Post Comments      | Number of comments made on file posts in feeds.   |
| Posts              | Number of times the file has been posted to a feed. This number doesn't count the number of times the file has been attached to comments on posts.  |
| Published Date     | Date a file, content pack, Google Doc, or Web link was first published or uploaded.   |
|                    |   |

| Field           | Description  |  |
|-----------------|--|--|
| Shares          | Number of times the file has been posted to a user's feed, shared using <b>Share with people</b> , and shared using <b>Share with groups</b> . |  |
| Size (MB)       | Size of the most recent file version in megabytes.   |  |
| Total Downloads | Number of times the file has been downloaded.  |  |
| Total Size (MB) | Combined Size of all uploaded file versions.   |  |
| Versions        | Number of uploaded file versions.  |  |

# **Tips for Using File and Content Reports**

- Salesforce CRM Content users who have the Manage Content option checked in their library permission can sort report data by the library they have access to ("My Libraries") or by all the libraries in an organization ("All Libraries"). Users without the Manage Content option can only sort data by the libraries they have access to.
- Sort custom reports by Library Name to view data for individual files as well as library summaries, such as total storage used
  and total number of downloads.
- Sort according to the Content ID to view data for a particular document.
- If you have Customer Portal or partner portal users with the "Create Libraries" user permission, run the Library Administrators report to determine which new libraries have been created by portal users.

#### SEE ALSO:

### **Limit Report Results**

# Forecast Reports

Forecast reports give you information about your customizable forecast data.



Note: If you don't see the Forecast Reports folder, your organization may not have customizable forecasting enabled. Customizable Forecasting includes five standard report types. You can't create custom report types with Customizable Forecasting.

# **Special Features of Customizable Forecast Reports**

Consider the following when running customizable forecast reports:

#### **Standard Reports**

Create a forecast history report if you want the report to include information about forecasts you already submitted. Select All Forecasts to show the state of the forecasts after each update. Choose Latest Forecasts to display only the current state of the forecasts.

### **Report Types**

- When creating a custom forecast report, choose the **Customizable Forecast: Opportunity Forecasts** report type if you want to include information about the opportunities that contribute to your forecast.
- You can include custom user fields in custom opportunity forecast reports as columns and as column values. Custom user fields are available as either opportunity owner or account owner custom information. The custom field label will be used for both

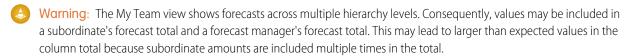
opportunity owner or account owner information, which can cause confusion if they are both on the same report and have similar field labels.

• If you have the "View All Forecasts" permission, forecast summary and forecast history reports include all users' data for the chosen forecast hierarchy, including users in branches of the forecast hierarchy that have no forecast manager.

# **Tips on Customizable Forecasting Reports**

- You must specify a reporting interval by fiscal year or by date.
- Forecast reports include private opportunities.
- Opportunity amounts are included in forecast reports if the opportunity is set to close within the forecast period.
- Forecast reports include only opportunities that are set to close within the forecast period, except those assigned to the Omitted forecast category.
- Create a forecast summary report if you want to view information about the amounts in your forecast without details of the opportunities that contribute to that amount.
- If your organization uses territories, you can create custom forecast reports that summarize information by territory name.
- You can view an opportunity forecast report based on the forecast hierarchy by drilling down in your forecast hierarchy.
  - 1. Select the desired role or territory from the **Hierarchy** links.
  - 2. Choose the appropriate forecast users or teams from the **Show Opportunities Owned By** or **Show Forecasts Owned By** scopes at the top of the report.
  - **3.** Click **Run Report** again to refresh the report data for your chosen parameters.

For example, to see your opportunity information, including your overrides on opportunity amounts or quantities and overrides from users below you in the forecast hierarchy, set the **Hierarchy** link to your forecast role. To see the opportunity information of someone beneath you in the forecasting hierarchy, drill down into that role.



Note: Click **Show Hierarchy** to see your org's role hierarchy above the report results. You can use the role hierarchy to share report data with people at different levels in the hierarchy. For example, if you see **CEO** > **VP** of **Global Sales** > **Sales Operations Director**, you're viewing data for the Sales Operations Director role. Click any role name to see and share the data that's visible to people in that role.

# SEE ALSO:

Limit Report Results

#### Lead Reports

Use lead reports to show information about the source and status of leads, how long it takes to respond to leads, neglected leads, and the history of lead fields.

# **Special Features of Lead Reports**

Consider the following when running lead reports:

#### **Standard Reports**

Choose the Lead History report type to track the history of standard and custom fields on leads where field histories are set to tracked. Use this report to see tracked fields' old and new values.



🎧 Tip: If you have the "Create and Customize Reports" permission, you can use the View drop-down on a Lead History Report to view lead history data by My Leads, My Team's Leads, User Owned Leads, Queue Owned Leads, and All Leads.

# **Tips for Lead Reports**

- Limit your report view to "My team's leads" to see leads owned by users who report to you in the role hierarchy.
- Lead reports can show all leads, both converted and unconverted. To limit your report to just unconverted leads, enter filter criteria of "Converted equals 0."
- The Last Activity of a lead is the most recent due date of an activity on the record. The following past or future activities set this date:
  - Any event
  - Closed tasks
- You can create a report of your lead information, export that data to Excel, and then do a mass mail merge using Microsoft<sup>®</sup> Word.

### **Lead Report Limitations**

- You can't use filter conditions to search the results of the Old Value and New Value fields.
- You can't use filter logic if you are filtering by Field/Event.

#### SEE ALSO:

**Limit Report Results** 

# Opportunity Reports

Opportunity reports provide information about your opportunities, including owners, accounts, stages, amounts, and more. The default settings show you the most commonly used information from each object, but you can customize a report to view other information, such as primary campaign source, forecast category, and synced quote.

#### IN THIS SECTION:

1. Tips for Working with Opportunity Reports

Opportunity reports can include all opportunity fields plus some extra columns for additional detail.

2. Standard Opportunity Reports

Standard opportunity reports help you report on your opportunity pipeline and history, opportunity sources, opportunity types, and more.

3. Opportunity Report Types

Report types provide a report template that you can customize to capture the unique data you're after without creating a report from scratch. Many of the opportunities custom report types include information from associated objects, such as products, partners, and quotes.

### SEE ALSO:

**Limit Report Results** 

### **Tips for Working with Opportunity Reports**

Opportunity reports can include all opportunity fields plus some extra columns for additional detail.

- You can use the following columns to provide additional detail:
  - Age—For an open opportunity, the number of days since the opportunity was created. For a closed opportunity, the number
    of days between the creation date and the closed date.
  - Stage Duration—The number of days the opportunity was in the stage listed in the Stage column. You can run the
     Opportunity Stage Duration report to see how much time an opportunity spent at different stages.
  - Last Activity—The most recent due date of an activity on the opportunity record, including any opportunity event or closed task.
- If your organization uses Forecasts or Customizable Forecasts, you'll see forecast report options paired with opportunity report options in the standard reports folders and the custom reports wizard. Opportunities owned by users who do not have a role in your organization's hierarchy are omitted from opportunity, forecast, and sales reports. This restriction does not apply to Personal, Essentials, or Group Edition organizations, which do not have a role hierarchy. For reports that include the Partner column (except for the Partner Opportunities report), only the primary partner of the opportunity is displayed.
- Not all Opportunity Product fields are available in report filters. For example, the Product Family field is not available in Opportunity Product report filters because it is related to that object through the Pricebook Entry object. To make the Product Family field available in Opportunity Product report filters—for cross-sell or upsell reporting—create a custom formula field to store its contents and use that formula field in your filter. From the object management settings for opportunities, go to the fields area, then create a custom field of type Formula, making sure to use Text for your formula return type and TEXT (PricebookEntry.Product2.Family) for your formula.
- In Professional, Enterprise, Unlimited, Performance, and Developer edition organizations, the **Hierarchy** links let you browse report results based on the role or territory hierarchies.
- If your organization uses previous versions of territory management (not Enterprise Territory Management), the Hierarchy filter on opportunity reports lets you view data according to either the role or territory hierarchies. In addition, the Territories filter lets you display either opportunities from all territories or opportunities that lack an associated territory.
- You can include the Primary Campaign Source field on all standard opportunity reports. This field is controlled by field-level security.
- Use the View filter to limit your opportunity report results. View options vary depending on your organization's Edition and setup.
  - My opportunities—Shows only your opportunities.
  - My team-selling opportunities—Shows opportunities for which you are on the opportunity team.
  - My team-selling and my opportunities—Shows your opportunities and opportunities for which you are on the opportunity team.
  - My team's opportunities—Shows your opportunities and opportunities owned by all of your subordinates in the role hierarchy. If your organization uses previous versions of territory management (not Enterprise Territory Management), the effect of this option depends on the value of the Hierarchy filter above. If you select <code>Role</code>, you see your opportunities and opportunities owned by all of your subordinates in the role hierarchy. If you select <code>Territory</code>, you see opportunities that you own and any opportunities owned by your territories' descendants.
  - My team's team-selling and their opportunities—For users who report to you in the role hierarchy, shows opportunities they
    own or for which they are on the opportunity team.
  - My territories—For organizations that use previous versions of territory management (not Enterprise Territory Management), this option shows opportunities that belong to the territories to which you are assigned.
  - My territories' opportunities—For organizations that use Enterprise Territory Management, this option shows opportunities that belong to the territories to which you are assigned.

- All opportunities—Shows all opportunities you can view.

# SEE ALSO:

Opportunity Reports
Opportunity Report Types
Standard Opportunity Reports

# **Standard Opportunity Reports**

Standard opportunity reports help you report on your opportunity pipeline and history, opportunity sources, opportunity types, and more.

- 1. In the Folders pane on the Reports tab, select **Opportunity Reports**.
- 2. Click the report you want.

| Report Name                             | Description  |
|---|--|
| Closed Opportunities                    | Won opportunities  |
| Opportunities by Type                   | Types of available opportunities.  |
| Opportunity Field History               | Field history on opportunities. Available only if your organization tracks this information.   |
| Opportunity History                     | Status changes on opportunities. Available only if your organization tracks this information.  |
| Opportunity Pipeline Trend              | A historical snapshot of your opportunities; opportunity amounts are grouped by historical stage for specified months. This report is available in Professional, Enterprise, Unlimited, Performance, and Developer Edition organizations only. |
| Opportunity Pipeline                    | Opportunities by stage.  |
| Opportunity Pipeline with Splits        | Opportunities summarized by split information such as assigned user and percentage.  |
| Opportunity Product                     | Opportunities by month and product.  |
| Opportunity Product Report with Splits  | Split assignments and percentages for each product. You can also summarize information by these fields:  |
|   | <ul> <li>Split Total Price-Split percentage multiplied by<br/>Total Price.</li> </ul>  |
|   | <ul> <li>Split Expected Product Amount-Split Total<br/>Price multiplied by Probability.</li> </ul>   |
| Opportunity Schedule Report with Splits | Opportunities by month, including split percentages for the opportunity team. To access this report, product scheduling must be enabled for your organization.   |
|   | You can also summarize information by these fields:  |

| Report Name                | Description   |
|----------------------------|---|
|                            | <ul> <li>Split Total Price—Split percentage multiplied by<br/>Total Price.</li> </ul>   |
|                            | <ul> <li>Split Schedule Amount—Split percentage multiplied<br/>by Schedule Amount.</li> </ul>   |
|                            | <ul> <li>Split Expected Product Amount-Split Total<br/>Price multiplied by Probability.</li> </ul>  |
|                            | <ul> <li>Split Expected Schedule Amount-Split<br/>Schedule Amount multiplied by Probability.</li> </ul>   |
| Opportunity Sources        | Sources of your opportunities.  |
| Opportunity Stage Duration | Duration of an opportunity at each stage.   |
| Opportunity Teams          | Information about opportunities and opportunity teams to which you belong.  |
| Partner Opportunities      | All partners associated with an opportunity or the primary partners only. To limit your results to primary partners, customize the report and enter <i>Primary equals True</i> on the criteria page of the report wizard. |
| Stuck Opportunities        | Open opportunities grouped by stage and then sorted by age.   |

# 3. Run the report.

### SEE ALSO:

**Opportunity Reports** 

Opportunity Report Types

Tips for Working with Opportunity Reports

# **Opportunity Report Types**

Report types provide a report template that you can customize to capture the unique data you're after without creating a report from scratch. Many of the opportunities custom report types include information from associated objects, such as products, partners, and quotes.

# IN THIS SECTION:

# **Opportunities Reports**

View standard information about your opportunities, including owners, accounts, stages, amounts, and more. The default settings show you the most commonly used information from each object, but you can customize the report to view other information, such as primary campaign source, forecast category, and synced quote.

#### Opportunities with Contact Roles Report

View information about the contacts associated with your opportunities, including name, title, and role.

#### Opportunities with Contact Roles and Products Report

View information about the contacts and opportunities associated with a selected product. You must select a product to filter results by when you run the report.

#### Opportunities with Competitors Report

View information about your company's competitors for opportunities, including their strengths and weaknesses.

#### Opportunities with Historical Trending Report

The Opportunities with Historical Trending report is a custom report type designed to help you analyze historical trends in your sales pipeline.

# Opportunity Field History Report

View information about the change history of key opportunity fields, including old and new values and the dates edits were made.

# **Opportunity History Report**

View information about the history of your opportunities, including stages and close date.

#### Opportunities with Opportunity Teams Report

View information about the members of your opportunity teams and their roles, organized by opportunity.

#### Opportunities with Opportunity Teams and Products Report

View information about your opportunity team members and their products, organized by opportunity. You must specify either a product or an opportunity team member to filter results by when you run the report.

#### Opportunities with Partners Report

View information about the partners you team with on your opportunities, including opportunity name, amount, and partner role.

#### Opportunities with Products Report

View information about the products associated with your opportunities, including product name and opportunity stage.

# **Opportunity Trends Report**

View information about trends shared by the opportunities in your pipeline.

### Opportunities with Quotes and Quote PDFs Report

View details about the quote PDFs created for each quote associated to an opportunity. The default settings show you the most commonly used information from each object, but you can customize the report to view other information, such as who created or last modified each listed quote PDF.

### Opportunities with Quotes and Quote Line Items Report

View details about the quotes associated with opportunities, and the line items for each quote. The default settings provide the most commonly used information from each object, but you can customize the report to see any opportunity, quote, or quote line item field.

#### SEE ALSO:

Choose a Report Type

**Opportunity Reports** 

Tips for Working with Opportunity Reports

# Opportunities Reports

View standard information about your opportunities, including owners, accounts, stages, amounts, and more. The default settings show you the most commonly used information from each object, but you can customize the report to view other information, such as primary campaign source, forecast category, and synced quote.



**Note**: Click **Show Hierarchy** to see your org's role hierarchy above the report results. You can use the role hierarchy to share report data with people at different levels in the hierarchy. For example, if you see **CEO** > **VP** of **Global Sales** > **Sales Operations** 

**Director**, you're viewing data for the Sales Operations Director role. Click any role name to see and share the data that's visible to people in that role.

The default settings for this report are:

# **Format**

Tabular

# **Selected Columns**

| Object Information Type       | Columns                           |
|-------------------------------|-----------------------------------|
| Opportunity Information       | Opportunity Name                  |
|                               | • Amount                          |
|                               | • Close Date                      |
|                               | • Stage                           |
|                               | • Age                             |
|                               | <ul> <li>Type</li> </ul>          |
|                               | <ul><li>Probability (%)</li></ul> |
|                               | • Lead Source                     |
|                               | • Fiscal Period                   |
|                               | • Next Step                       |
|                               | • Created Date                    |
| Opportunity Owner Information | • Opportunity Owner               |
|                               | • Owner Role                      |
| Account Information           | • Account Name                    |
|                               |                                   |

# SEE ALSO:

Limit Report Results

Opportunity Reports

Opportunities with Contact Roles Report

View information about the contacts associated with your opportunities, including name, title, and role.

The default settings for this report are:

# Format

Tabular

| Object Information Type       | Columns             |
|-------------------------------|---------------------|
| Opportunity Information       | • Opportunity Name  |
| Opportunity Owner Information | • Opportunity Owner |

| Object Information Type           | Columns                   |
|-----------------------------------|---------------------------|
| Account: General Information      | Account Name              |
| Contact Role: General Information | • Title                   |
|                                   | • First Name              |
|                                   | • Last Name               |
| Contact Role: Phone/Fax/Email     | • Phone                   |
|                                   | • Email                   |
| Contact Role: Address             | • Mailing Street          |
|                                   | Mailing City              |
|                                   | • Mailing State/Province  |
|                                   | • Mailing ZIP/Postal Code |
|                                   | • Mailing Country         |

# SEE ALSO:

Limit Report Results

Opportunity Reports

Opportunities with Contact Roles and Products Report

View information about the contacts and opportunities associated with a selected product. You must select a product to filter results by when you run the report.

The default settings for this report are:

# **Format**

Tabular

| Opportunity: Information  Opportunity Name  Product Information  Product Name |
|---|
| Product Information • Product Name  |
|   |
| Opportunity Owner Information • Opportunity Owner                             |
| Account: General Information  • Account Name                                  |
| Contact Role: General • Title   |
| • First Name  |
| • Last Name   |

| Object Information Type       | Columns                                     |
|-------------------------------|---|
| Contact Role: Phone/Fax/Email | • Phone                                     |
|                               | • Email                                     |
| Contact Role: Address         | • Mailing Street                            |
|                               | <ul> <li>Mailing City</li> </ul>            |
|                               | <ul> <li>Mailing State/Province</li> </ul>  |
|                               | <ul> <li>Mailing ZIP/Postal Code</li> </ul> |
|                               | <ul> <li>Mailing Country</li> </ul>         |
|                               |   |

SEE ALSO:

Limit Report Results

Opportunity Reports

Opportunities with Competitors Report

View information about your company's competitors for opportunities, including their strengths and weaknesses.

The default settings for this report are:

#### **Format**

Summary

# **Selected Columns**

| Object Information Type      | Columns           |
|------------------------------|-------------------|
| Opportunity Information      | Opportunity Name  |
|                              | • Close Date      |
|                              | • Amount          |
| Competitor Information       | • Competitor Name |
|                              | • Strengths       |
|                              | • Weaknesses      |
| Account: General Information | • Account Name    |
|                              |                   |

SEE ALSO:

**Limit Report Results** 

**Opportunity Reports** 

Opportunities with Historical Trending Report

The Opportunities with Historical Trending report is a custom report type designed to help you analyze historical trends in your sales pipeline.

We've selected some of the most useful Opportunity fields for you in the default report:

#### **Amount**

Estimated total sale amount. For organizations using multiple currencies, the amount is shown in your personal currency by default. Change the Opportunity Currency picklist to track the amount in another currency.

#### **Close Date**

Date when you plan to close the opportunity. You can enter a date, or choose a date from the calendar that displays when you put your cursor in the field.

#### Stage

Current stage of opportunity based on selections you make from a predefined list, for example, Prospect or Proposal.

### **Probability**

Percentage of estimated confidence in closing the opportunity.

# **Forecast Category**

Forecast category name that is displayed in reports, opportunity detail and edit pages, opportunity searches, and opportunity list views. The setting for an opportunity is tied to its Stage.



Note: If you edit this report type, it is no longer automatically updated. If you remove this report type, it will not be regenerated.

Opportunity Field History Report

View information about the change history of key opportunity fields, including old and new values and the dates edits were made.



Note: You must enable and set up field history tracking and select fields in order to use the Field History Tracking report.

The default settings for this report are:

#### **Format**

Tabular

#### **Selected Columns**

| Object Information Type       | Columns           |
|-------------------------------|-------------------|
| History Data                  | • Edit Date       |
|                               | • New Value       |
|                               | • Edited By       |
|                               | • Field/Event     |
|                               | • Old Value       |
| Opportunity Fields            | Opportunity Name  |
| Opportunity Owner Information | Opportunity Owner |
|                               |                   |

SEE ALSO:

Limit Report Results

Opportunity Reports

Opportunity History Report

View information about the history of your opportunities, including stages and close date.

The default settings for this report are:

# Format

Summary

# **Selected Columns**

| Object Information Type         | Columns  |
|---------------------------------|--|
| Opportunity Information         | • Opportunity Name   |
| Opportunity Owner Information   | • Owner  |
| Opportunity History Information | <ul><li>From Stage</li><li>Amount</li><li>Last Modified</li><li>To Stage</li></ul> |
|                                 | <ul><li>Probability (%)</li><li>Last Modified By</li><li>Close Date</li></ul>      |

# SEE ALSO:

Limit Report Results

Opportunity Reports

Opportunities with Opportunity Teams Report

View information about the members of your opportunity teams and their roles, organized by opportunity.

To be able to use this report, enable team selling.

The default settings for this report are:

# **Format**

Tabular

| Object Information Type | Columns  |
|-------------------------|--|
| Opportunity information | Opportunity Name                                     |
| Team member information | <ul><li>Team Member Name</li><li>Team Role</li></ul> |

If your admin has created custom opportunity team fields, you can include them in this report.

#### SEE ALSO:

**Limit Report Results** 

Opportunity Reports

Opportunities with Opportunity Teams and Products Report

View information about your opportunity team members and their products, organized by opportunity. You must specify either a product or an opportunity team member to filter results by when you run the report.

The default settings for this report are:

#### **Format**

Tabular

#### **Selected Columns**

| Object Information Type | Columns  |
|-------------------------|--|
| Opportunity Information | • Opportunity Name                                   |
| Product Information     | • Product Name                                       |
| Team Member Information | <ul><li>Team Member Name</li><li>Team Role</li></ul> |
|                         |  |

# SEE ALSO:

**Limit Report Results** 

**Opportunity Reports** 

Opportunities with Partners Report

View information about the partners you team with on your opportunities, including opportunity name, amount, and partner role.

The default settings for this report are:

# **Format**

Summary

| Object Information Type       | Columns  |
|-------------------------------|--|
| Opportunity Information       | <ul><li>Opportunity Name</li><li>Close Date</li><li>Amount</li></ul> |
| Opportunity Owner Information | • Opportunity Owner  |
| Partner Information           | <ul><li>Partner Owner</li><li>Partner Role</li></ul>                 |

| Object Information Type | Columns                         |
|-------------------------|---------------------------------|
|                         | • Partner                       |
| Account Information     | Account Owner      Account Name |
|                         | - Account Name                  |

# SEE ALSO:

Limit Report Results

Opportunity Reports

Opportunities with Products Report

View information about the products associated with your opportunities, including product name and opportunity stage.

The default settings for this report are:

# **Format**

Matrix

# **Summary Fields**

Total Price (sum)

| Object Information Type | Columns                                 |
|-------------------------|---|
| Opportunity Information | • Opportunity Name                      |
|                         | • Amount                                |
|                         | • Close Date                            |
|                         | • Stage                                 |
|                         | Age                                     |
|                         | • Type                                  |
|                         | <ul> <li>Probability</li> </ul>         |
|                         | • Created Date                          |
| Product Information     | • Product Name                          |
|                         | • Product Code                          |
|                         | • Quantity                              |
|                         | Active Product                          |
|                         | • Sales Price                           |
|                         | • Product Date                          |
|                         | <ul> <li>Product Description</li> </ul> |
|                         | • Total Price                           |
|                         | • Product: Month                        |
|                         | • List Price                            |

| Object Information Type       | Columns  |
|-------------------------------|--|
| Opportunity Owner Information | <ul><li>Opportunity Owner</li><li>Owner Role</li></ul> |
| Account: General Information  |  |
| , recount dericle mornator    | Account Name   |

#### SEE ALSO:

**Limit Report Results** 

**Opportunity Reports** 

Opportunity Trends Report

View information about trends shared by the opportunities in your pipeline.

The default settings for this report are:

#### **Format**

Matrix

# Groupings

The default report shows rows grouped by Historical Stage and columns grouped by As of Date.

# **Summary Fields**

Historical Amount (sum)

#### **Selected Columns**

| Object Information Type       | Columns                   |
|-------------------------------|---------------------------|
| Opportunity Information       | • Opportunity Name        |
| Opportunity Trend Information | • Historical Amount       |
|                               | • As of Date              |
|                               | • Historical Stage        |
| Opportunity Owner Information | • Opportunity Owner Alias |
|                               |                           |

# SEE ALSO:

**Limit Report Results** 

Opportunity Reports

Opportunities with Quotes and Quote PDFs Report

View details about the quote PDFs created for each quote associated to an opportunity. The default settings show you the most commonly used information from each object, but you can customize the report to view other information, such as who created or last modified each listed quote PDF.

The default settings for this report are:

#### **Format**

Summary

### Grouping

The default report shows quotes and quote PDFs grouped by Opportunity Name.

#### **Selected Columns**

| Object Information Type | Columns  |
|-------------------------|--|
| Opportunity Information | • Opportunity Name   |
| Quote Information       | <ul><li>Quote Name</li><li>Syncing</li></ul>   |
| Quote PDF Information   | <ul><li>Quote PDF: Created Date</li><li>Quote PDF: Name</li><li>Quote PDF: Discount</li><li>Quote PDF: Grand Total</li></ul> |

#### SEE ALSO:

**Limit Report Results** 

**Opportunity Reports** 

Opportunities with Quotes and Quote Line Items Report

View details about the quotes associated with opportunities, and the line items for each quote. The default settings provide the most commonly used information from each object, but you can customize the report to see any opportunity, quote, or quote line item field.

If your organization uses multicurrency or advanced currency management, you have additional options for customizing this report. When you select report columns, you can select the "converted" version of an amount or total column to show its value converted to a different currency. Select the currency you want to convert to under Advanced Settings when you select your report criteria.

The default settings for this report are:

### **Format**

Summary

# **Summary Fields**

Amount (sum)

Quote Discount (sum)

#### Groupings

The default report shows you results grouped first by Opportunity Name and then by Quote Name. Each quote line item is listed beneath its associated quote.

| Object Information Type | Columns                     |
|-------------------------|-----------------------------|
| Opportunity Information | • Opportunity Name • Amount |
| Quote Information       | • Quote Name                |

| Object Information Type     | Columns                        |
|-----------------------------|--------------------------------|
|                             | • Discount                     |
|                             | • Syncing                      |
|                             | • Status                       |
| Quote Line Item Information | • Quote Line Item: Discount    |
|                             | • Product: Product Name        |
|                             | • Line Item Number             |
|                             | • Sales Price                  |
|                             | • List Price                   |
|                             | • Quote Line Item: Subtotal    |
|                             | • Quote Line Item: Total Price |

#### SEE ALSO:

Limit Report Results

**Opportunity Reports** 

### Product and Asset Reports

Use product and asset reports to view information about the products your users currently have installed. Find out what assets your customers have, list the cases filed for a particular asset, or identify assets that aren't associated with a product.

# **Special Features of Product and Asset Reports**

Consider the following when running product and asset reports:

# **Standard Reports**

Use the Assets without Products report, available from the "Products and Asset Reports" folder to list the assets that are not associated with a product. Depending on how you use assets, these assets can represent your competitor's products.

# **Report Types**

- To create a custom report showing what assets your customers have, click **New Report** from the Reports tab and choose the Accounts with Assets or Contacts with Assets report type from the Accounts & Contacts report type category.
- To view a list of the cases filed for a particular asset, click **New Report** from the Reports tab and choose the Assets with Cases report type from the Price Books, Products and Assets option.

#### SEE ALSO:

**Limit Report Results** 

# Self-Service Reports

Self-Service reports help you analyze the effectiveness of your Self-Service portal. Find out how many cases are being viewed, how many customers are logging in, or what customers think of the solutions you're offering.



**Note:** Starting with Spring '12, the Self-Service portal isn't available for new orgs. Existing orgs continue to have access to the Self-Service portal.

#### **Standard Reports**

- The Self-Service Usage Report gives you information on how many cases are viewed and logged, the number of comments that have been added, and the number of searches Self-Service users have performed.
- The Self-Service User Report provides information about the customers who are logging into your Self-Service portal, including the associated account and last login date. You can also include Self-Service fields in any custom contact report.
- The Helpful Solutions report displays statistics from Self-Service portals that display solutions. On each Self-Service solution page, customers can indicate whether the solution is helpful. You can use the results of this survey when choosing the top five solutions for your Self-Service Home page and to verify that customers are able to find the solutions they need.

#### SEE ALSO:

**Limit Report Results** 

### Reporting on Support Activity

Use support reports to track the number of cases created, case comments, case emails, case owners, case contact roles, cases with solutions, the length of time since the case last changed status or owner, and the history of cases.

You can also report on the solutions for your organization, including solution history, the languages in which solutions have been written, and whether translated solutions are out of date. If you have enabled the Self-Service portal, you can run reports to track usage of your Self-Service portal.

### IN THIS SECTION:

1. Fields Available for Case Reports

You can report on a number of key case fields in addition to the ones that are included in the standard and custom report types.

2. Fields Available for Solution Reports

You can report on a number of key solution fields in addition to the standard and custom fields.

#### SEE ALSO:

**Limit Report Results** 

#### **Fields Available for Case Reports**

You can report on a number of key case fields in addition to the ones that are included in the standard and custom report types.

Available in: Salesforce Classic

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

# Cases

| Field                          | Description   |
|--------------------------------|---|
| # Cases Submitted              | The number of cases submitted by Self-Service users via the Self-Service portal. (Self-Service Usage Report)  |
| # Cases Viewed                 | The number of cases viewed by Self-Service users via the Self-Service portal.  (Self-Service Usage Report)  |
| # Comments Added               | The number of comments added to all cases by Self-Service users via the Self-Service portal.  (Self-Service Usage Report)   |
|                                |   |
| Entitlement Process Start Time | The time the case entered an entitlement process.   |
| Time                           | This field displays if an entitlement process applies to the case.  |
| Entitlement Process End Time   | The time the case exited an entitlement process.  |
|                                | This field displays if an entitlement process applies to the case.  |
| Super User                     | A contact enabled to view case information, add comments, and upload attachments for all cases anyone in the company submitted via the Self-Service portal.   |
|                                | (Self-Service User Report)  |
| Self-Service Commented>        | A checkbox showing a comment was added to a case via the Self-Service portal.   |
| New Self-Service Comment       | A checkbox showing someone added a comment to a case via the Self-Service that the case owner didn't review yet.  |
| Is Incoming                    | A checkbox showing a case was received by email via the Email-to-Case or On-Demand Email-to-Case feature.  (Cases with Emails Report)   |
| Age                            | The age of an open case is the elapsed time from creation to the present. The age of a closed case is the elapsed time from creation to the closing time of the case. Age can be expressed in days, hours, or minutes. Note that the age of a case does <i>not</i> take into account any holidays that are associated with the case's business hours. Holidays suspend business hours during specified dates and times. |
| Closed                         | A checkbox showing a case has a closed status.  |
| Escalated                      | A checkbox showing a case was escalated by an escalation rule.  |
| Public Case Commented          | A checkbox showing a case has comments that may be displayed via the Self-Service portal.   |
| Has Attachment                 | A checkbox showing a case with emails has attachments.  |
|                                | (Cases with Emails Report)  |

# Cases

| Field                               | Description  |
|-------------------------------------|--|
| Old Value                           | The value in a tracked case or solution field before it was changed.   |
|                                     | (Case History Report and Solution History Report)  |
| New Value                           | The value in a tracked case or solution field after it was changed.  |
|                                     | (Case History Report and Solution History Report)  |
| Business Hours                      | The number of business hours that have elapsed since a case was last updated. Note that holidays are <i>not</i> taken into account for this field. Holidays suspend business hours during specified dates and times.     |
|                                     | (Case History Report)  |
| Business Hours Since Similar Change | The number of hours that elapsed since the same field on a case was last updated. Note that holidays are <i>not</i> taken into account for this field. Holidays suspend business hours during specified dates and times. |
|                                     | (Case History Report)  |
| History ID                          | The unique identifier for each change tracked on a specified case or solution field.   |
|                                     | (Case History Report and Solution History Report)  |
| Contact Account Name                | The account associated with the contact on the case. View together with the Account Name field to see if the account on the case is different from the account on the contact.   |
| Parent Case ID                      | The ID of a parent case, which can be used to access a parent case via the API.  |

# Fields Available for Solution Reports

You can report on a number of key solution fields in addition to the standard and custom fields.

| Field                       | Description   |
|-----------------------------|---|
| # Solution Searches         | The number of solution searches performed by Self-Service users via the Self-Service portal.  |
|                             | (Self-Service Usage Report)   |
| Self-Service Access Count   | The number of times a solution was viewed in the Self-Service portal.   |
| Self-Service Answer Count   | The number of times the survey question "Does this Solution help you answer your question?" is answered, either positively or negatively, on a solution in the Self-Service portal. |
| Self-Service Positive Count | The number of times the survey question "Does this Solution help you answer your question?" is answered positively on a solution in the Self-Service portal.                        |
| Author                      | The name of the user who originally created the solution.   |
| Num Related Cases           | The number of cases associated with the solution.   |

| Field                       | Description   |
|-----------------------------|---|
| Reviewed                    | Checkbox that indicates whether the solution has a reviewed status.                                     |
| Old Value                   | The value in a tracked case or solution field before it was changed.                                    |
|                             | (Case History Report and Solution History Report)   |
| New Value                   | The value in a tracked case or solution field after it was changed.                                     |
|                             | (Case History Report and Solution History Report)   |
| History ID                  | The unique identifier for each change tracked on a specified case or solution field.                    |
|                             | (Case History Report and Solution History Report)   |
| Language                    | The language in which the master solution is written.   |
| Translation Language        | The language in which the translated solution is written.   |
|                             | (Translated Solutions report)   |
| Solution ID                 | The unique identifier for each solution.  |
|                             | (Translated Solutions report)   |
| Out of Date                 | Checkbox that indicates that the translated solution may need translating to match its master solution. |
|                             | (Translated Solutions report)   |
| Master Solution Title       | The title of the master solution. Displays up to 250 characters.  |
| Translated Solution Title   | The title of the translated solution. Displays up to 250 characters.                                    |
| Master Solution Details     | The solution details of the master solution. Displays up to 1000 characters.                            |
| Translated Solution Details | The solution details of the translated solution. Displays up to 1000 characters.                        |
|                             |   |

# **Pre-Designed Custom Report Types**

Some Salesforce features come with custom report types that are designed for you in advance, so you don't have to create a new report.



**Note**: Pre-designed custom report types are not the same as standard report types.

# IN THIS SECTION:

#### 1. Territory Reports

Use territory reports to analyze your sales territories. Identify which users have been assigned to which territories, which users have been assigned more than one territory, or which users have no territories.

# 2. Reports for Answers

Create custom report types so users can analyze questions, replies, and votes.

#### 3. Salesforce CRM Call Center Reports

Call Center reports help you analyze the Salesforce CRM Call Center phone calls that were handled by you and your team.

# 4. Create a Custom Report Type for Approval History

Before you can run reports on executed and in-progress approval processes and their steps, you need to create a custom report type for approval process instances.

# 5. Create a Custom Report Type in Collaborative Forecasts

To make a forecasting report available to users, administrators must create a custom report type. A *report type* defines the set of records and fields available to a report based on the relationships between a primary object and its related objects. Reports display only records that meet the criteria defined in the report type.

# 6. Custom Report Types in Collaborative Forecasts

A report type defines the set of records and fields available to a report based on the relationships between a primary object and its related objects. Reports display only records that meet the criteria defined in the report type. When you create a custom report type, choose the primary and related objects carefully, because they determine the forecast types you can report on.

#### 7. Idea Reports

Create custom report types so users can create reports about ideas, idea comments, and votes.

# 8. Report on Salesforce Knowledge Articles

Use Salesforce Knowledge custom reports to track how articles are created, maintained, and delivered.

#### 9. Live Agent Session Reports

Use Live Agent Session reports to consolidate data about agents' activities while they chat with customers—for example, how long agents are online or how many chat requests are assigned to them.

### 10. Report on Partners

Some opportunities involve partner relationships. Use this report to identify and analyze those relationships.

#### 11. Report on Relationship Groups

You can report on relationship groups and relationship group members if your administrator has enabled custom report types for those custom objects.

# **EDITIONS**

Available in: both Salesforce Classic and Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

**AND** 

Report Builder

# Enhanced Folder Sharing

Create and Customize Reports

AND

Report Builder

# to run reports:

Legacy Folder Sharing
Run Reports

# Enhanced Folder Sharing

**Run Reports** 

#### 12. Enable the Account Owner Report

The Account Owner report lists all accounts and who owns them.

# 13. Report on File Search Activity

Use a report to determine the top 300 search term queries for file searches and to identify which content is missing or needs to be renamed based on users' search terms and the click-rank.

#### 14. Report on Chatter Top 100 Feed Item Views with Interaction Count Report

Get a report on the top 100 feed item views in your organization or community with the primary object Interaction Count Report. Knowing the posts that people are looking at most is a great way to get insight into current Chatter trends. Actions counted as views include liking, commenting, and viewing a feed item detail. View counts are not unique. For example, a user can add three comments to a post, and that is counted as three views. Once you set up the report, it's run weekly.

# 15. Related Articles and Questions Reports

Create custom report types so users can report on click-through rates on related articles and questions. Salesforce Einstein suggests related articles and questions in communities. Use the click-through rates reports to create content around the most accessed articles and questions, empowering your customers to find the information they need.

# 16. Community Case Deflection from Discussions and Articles

Get insight into how well the Contact Support Form and Case Deflection components actually deflect cases from being created. Using the Case Deflection Dashboard, get real-time metrics on potential and confirmed case deflections, the most helpful articles and discussions, and the least helpful articles and discussions.

### 17. Report on External Documents Attached to Cases

Create a report to see how many and which specific external documents are being attached to cases. Use this information to see which external sources have the most impact on closing cases. This report is helpful when you have set up Salesforce Federated Search, which gives users access to external search results when using the Knowledge One Widget. Users can attach external documents to cases only if Chatter is enabled.

# **Territory Reports**

Use territory reports to analyze your sales territories. Identify which users have been assigned to which territories, which users have been assigned more than one territory, or which users have no territories.

#### **Special Features of Territory Reports**

Consider the following when running territory reports:

#### **Standard Reports**

- The territory report lists all territories in your organization. Select No Users in the Users
  drop-down list and click Run Report to see the territories in your organization that do not
  have any assigned users.
- The User Territory report, User Multiple Territory report, and User Missing Territory report summarize the users who have been assigned to any territories, more than one territory, or no territories, respectively.
- The Account Territory report, Account Multiple Territory report, and Account Missing Territory report summarize the accounts that have been assigned to any territories, more than one territory, or no territories, respectively.
- The Opportunity Territory report summarizes the opportunities that are in territories. To see opportunities owned by users who are not currently active in the opportunity's territory, customize the Opportunity Territory report with the following advanced filter: Active in Territory equals "False." The Opportunity Missing Territory report summarizes the opportunities that are associated with accounts that do not have a territory.

# **EDITIONS**

Available in: Salesforce Classic

Territory management is available in: **Performance** and **Developer** Editions and in **Enterprise** and **Unlimited** Editions with the Sales Cloud.

• Reports run from custom report types that include territories may display results differently than standard reports that include territories. This is because reports run from custom report types only display results with territories, such as accounts with territories, whereas standard reports that include territories may display results without territories. For example, if you select the Account Territory Report, results display accounts without territories. In custom report types, when using the Territories filter that includes territories, Multiple Territories or Missing Territories are not shown in the report results.

#### **Tips for Territory Reports**

• Standard and custom territory fields are available in territory reports. They are also available in account reports, activity reports that include accounts, opportunity reports, and user reports.

#### SEE ALSO:

**Limit Report Results** 

#### Reports for Answers

Create custom report types so users can analyze questions, replies, and votes.



**Note:** Answers will no longer be supported in all Salesforce orgs as of the Spring '18 release. For more information, see End of Support for Chatter Answers in Spring '18. Starting with Summer '13, Answers isn't available in new orgs. Instead, you can use Chatter Questions, a Q&A feature that's seamlessly integrated into Chatter. With Chatter Questions, users can ask questions and find answers without ever needing to leave Chatter. Existing orgs will continue to have access to Answers if it was enabled before the Summer '13 release.

As an administrator, you can create custom report types so users can create reports about questions, replies, and votes. Custom report types are the only way to make reports about your answers community available for your users—Salesforce does not provide sample answers reports or a standard report folder for answers.

To create a folder of answers reports for your users:

- 1. Set up a custom report type for answers.
  - The primary object for your report is Questions.
  - There isn't a specific report category for answers, so you probably want to store your report in the Other Reports or Administrative Reports category.
  - When setting up object relationships, Questions can have a relationship with Replies, and Replies can have a relationship with Votes.
- 2. Create a new public folder for answers reports. This step requires the "Manage Public Reports" permission.

**3.** Using your custom report type, create one or more new custom reports for answers. Assign the reports to the new answers reports folder you created.

After completing these steps, a folder of answers reports is available to your users on the Reports home page.

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Answers is available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions.

### **USER PERMISSIONS**

To create or update custom report types:

 Manage Custom Report Types

To delete custom report types:

Modify All Data

Salesforce CRM Call Center Reports

Call Center reports help you analyze the Salesforce CRM Call Center phone calls that were handled by you and your team.

#### **Special Features of Call Center Reports**

Consider the following when running call center reports:

#### **Standard Reports**

- The My Team's Calls This Week gives you information about the calls that were handled by the call center users on your team during the past week, including associated records and the result of each call.
- The My Calls Today report gives you information about the calls that you initiated or received during the past day, including associated records and the result of each call.
- The My Calls This Week report gives you information about the calls that you initiated or received during the past week, including associated records and the result of each call.

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

### **USER PERMISSIONS**

To run reports:

Run Reports

AND

Read on the records included in report

#### Create a Custom Report Type for Approval History

Before you can run reports on executed and in-progress approval processes and their steps, you need to create a custom report type for approval process instances.

- 1. From Setup, enter Report Types in the Quick Find box, then select Report Types.
- 2. Click New Custom Report Type.
- **3.** Fill out the fields.

| For this field    | Do this   |
|-------------------|---|
| Primary Object    | Select Process Instance.  |
|                   | A process instance represents one instance of<br>an approval process. A new process instance<br>is created each time a record is submitted for<br>approval. |
| Report Type Label | Enter a label. Users see this label when they create reports.   |
|                   | Example: Approval Process Instances   |
| Report Type Name  | Enter a unique name for the report type.  |
| Description       | Enter a description. Users see this label when they create reports.   |
|                   |   |

### **EDITIONS**

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

### **USER PERMISSIONS**

To create or update custom report types:

 Manage Custom Report Types

To delete custom report types:

Modify All Data

| For this field    | Do this   |
|-------------------|---|
| Store in Category | Select Administrative Reports.  |
|                   | If you like, you may select a different category. This determines in which folder your users find the custom report type when they create approval history reports. |
| Deployment Status | When you're ready to let all users access the report type, select Deployed.   |

#### 4. Click Next.

- 5. Click the box under the primary object.
- **6.** Select Process Instance Node.

A process instance node represents an instance of an approval step. A new process instance node is created each time a record enters a step in an approval process. No process instance node is created when the record doesn't meet the step criteria or if the approval process instance is otherwise completed without entering the step.

**7.** For the A to B relationship, select one of these options.

| Option   | Description  |
|--|--|
| Each "A" record must have at least one related "B" record. | The report includes only process instances that enter at least one approval step to create a process instance node.        |
|  | The report excludes process instances for records that were submitted for approval but that didn't meet any step criteria. |
| "A" records may or may not have related "B" records.       | The report includes all process instances.   |

#### 8. Click Save.

After the report type is deployed, notify the relevant users with the names of the category folder and the custom report type, so that they can start creating and running approval history reports.

#### SEE ALSO:

Approval History Reports
Create a Custom Report Type
Build a Report in Salesforce Classic

Create a Custom Report Type in Collaborative Forecasts

To make a forecasting report available to users, administrators must create a custom report type. A *report type* defines the set of records and fields available to a report based on the relationships between a primary object and its related objects. Reports display only records that meet the criteria defined in the report type.



**Note**: This information applies to Collaborative Forecasts and not Customizable Forecasts. To create a forecasting custom report type, enable Collaborative Forecasts.

- 1. Start creating a custom report type from Setup by entering *Report Types* in the Quick Find box, then selecting **Report Types** and **New Custom Report Type**.
- 2. For Primary Object, select a Forecasting object, such as Forecasting Items or Forecasting Quotas.
- **3.** For Store in Category, select **Forecasts**.
- **4.** Let your reps know the locations and names of the report types.

### **EDITIONS**

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Professional** (no custom field or opportunity splits forecasts), **Performance**, and **Developer** Editions and in **Enterprise** and **Unlimited** Editions with the Sales Cloud

### **USER PERMISSIONS**

To create or update custom report types:

 Manage Custom Report Types

To delete custom report types:

Modify All Data

#### Custom Report Types in Collaborative Forecasts

A report type defines the set of records and fields available to a report based on the relationships between a primary object and its related objects. Reports display only records that meet the criteria defined in the report type. When you create a custom report type, choose the primary and related objects carefully, because they determine the forecast types you can report on.



**Note:** This information applies to Collaborative Forecasts and not Customizable Forecasts. To create a forecasting custom report type, enable Collaborative Forecasts.

This table lists the forecasting custom report types that you can create.

#### 

# Forecasting Items

Viewing information about forecasting amounts, including adjustment amount information. As a best practice, if you use a forecast type based on revenue, use these default fields in the report type.

- Owner Only Amount—The sum of a person's revenue opportunities, without adjustments. For example, if you own two opportunities, each worth \$10,000, the Owner Only Amount is \$20,000.
- Amount Without Adjustments—The sum of a person's owned revenue opportunities and the person's subordinates' opportunities, without adjustments. Subordinates include everyone reporting up to a person in the forecast hierarchy. This amount is visible only on reports. For

### **EDITIONS**

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Professional** (no custom field or opportunity splits forecasts), **Performance**, and **Developer** Editions and in **Enterprise** and **Unlimited** Editions with the Sales Cloud

#### **Primary Object**

#### Use to create a report for...

example, if the sum of the amount of all opportunities owned by you is \$20,000, and the sum of the amount of your subordinates' opportunities is \$55,000, the Amount Without Adjustments is \$75,000.

- Amount Without Manager Adjustments—The forecast number as seen by the forecast owner. This is the sum of the owner's revenue opportunities and the owner's subordinates' opportunities, including adjustments made by the forecast owner on the owner's or subordinates' forecasts. It doesn't include adjustments made by forecast managers above the owner in the forecast hierarchy. For example, Anne has an Amount Without Adjustments of \$75,000, made up of \$20,000 of her own opportunities and \$55,000 of opportunities owned by Ben, her subordinate. She adjusts Ben's amount to \$65,000 for a total of \$85,000. If you adjust Anne's number from \$85,000 to \$100,000, you see \$85,000 in Amount Without Manager Adjustments, because Anne sees this amount (and Anne can't see your adjustments because you're her manager). To see the amount that includes your adjustment to \$100,000, look at Forecast Amount.
- Forecast Amount—The revenue forecast from the forecast manager's perspective and the sum of the owner's and subordinates' opportunities, including all forecast adjustments. For example, you're a forecast manager and have another forecast manager reporting to you who has an Amount Without Manager Adjustment totaling \$85,000. If you adjust the forecast to \$100,000, the Forecast Amount is \$100,000.

If you use a forecast type based on quantity, use these default fields in the report type.

 Owner Only Quantity, Quantity Without Adjustments, Quantity Without Manager Adjustments, and Forecast Quantity

Regardless of whether you forecast based on revenue or quantity, add these fields.

- Has Adjustment—A checkbox that indicates whether a manager adjustment has been made on a forecast owner's amount.
- Has Owner Adjustment—A checkbox that indicates whether a forecast user has adjusted the user's own forecast amount.

If you use cumulative forecast rollups, add this field to your report.

ForecastingItemCategory—This field indicates which rollup each forecast amount is for: Open
Pipeline, Best Case Forecast, Commit Forecast, Closed Only, Pipeline, Best Case, Commit, or Closed.
If you changed the forecast category names, those changes appear in the ForecastingItemCategory
values.

Forecasting Items With Opportunities as a related object

Viewing opportunity revenue or opportunity quantity forecasts. View opportunity information for specific forecasting line items. For example, you can create a summary report for each of your subordinates that includes the opportunity names and last activity dates for their forecasting items, with adjustment information and final forecast amounts.



**Note:** For opportunities with no opportunity products specified, this report type includes two forecasting items: one for the Opportunity-Revenue forecast type and one for the Product Family forecast type. These product family forecasting items roll up into the Products Not Specified row of the Product Family forecast.

Forecasting Items
With Opportunity
Splits as a related object

Viewing opportunity splits or custom field forecasts. View opportunity split or custom field information for specific forecasting line items. For example, you can create a summary report for each of your

| Primary Object   | Use to create a report for   |
|--|--|
|  | subordinates that includes the opportunity split amounts and percentages for their forecasting items, with adjustment information and final forecast amounts.  |
| Forecasting Items with Opportunity Product as a related object | Viewing product family revenue or product family quantity forecasts. View product family information for specific forecasting line items. For example, you can create a summary report for each of your subordinates that includes the product families and total price for their forecasting items, with adjustment information and final forecast amounts. |
|  | Note: This report type shows forecasting items only for the Product Family-Revenue and Product Family-Quantity forecast types. It includes opportunities with and without opportunity products specified.  |
| Forecasting Quotas   | Viewing data about individual or team quotas. As a best practice, include all the default fields in the report type. For example, you can include lookup fields, such as the full name of the owner. When running the report, you can filter by your name to see quotas that you created and their related accounts and owners.                              |
| Forecasting Quotas with Forecasting Items as a related object  | Viewing quota attainment. For example, you can use Forecasting Quotas and Forecasting Items to create the custom report type. Then, when you create the report, include a team's quotas and forecasted revenue for closed forecasts and create a formula field to display the attained quota percentage.   |



Note: If you delete a forecast type, reports that use that forecast type don't run.

### Idea Reports

Create custom report types so users can create reports about ideas, idea comments, and votes.

As an administrator, you can create custom report types so users can analyze what happens to ideas. Custom report types are the only way to make idea reports available for your users—Salesforce does not provide sample idea reports or a standard report folder for ideas.

To create a folder of idea reports for your users:

- 1. Create a custom report type for ideas.
  - If you create a custom report type that uses Ideas as the primary object and Votes as the secondary object, child (merged) ideas will not appear in the report unless you select "A" records may or may not have related "B" records. Child ideas have no votes because their votes are transferred to the master idea. This means child ideas do not appear in a report if the Votes object is required.
- **2.** Create a new public folder for idea reports. This step requires the "Manage Public Reports" permission.
- **3.** Using your custom report type, create one or more new custom reports for ideas. Assign the reports to the new idea reports folder you created.

After completing these steps, a folder of idea reports will be available to your users on the Reports home page.

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

### **USER PERMISSIONS**

To create or update custom report types:

 Manage Custom Report Types

To delete custom report types:

Modify All Data

#### Report on Salesforce Knowledge Articles

Use Salesforce Knowledge custom reports to track how articles are created, maintained, and delivered.

As an administrator, you can create custom report types so agents can create reports on Salesforce Knowledge articles. Custom report types are the only way to make reports about articles available for your readers. Salesforce does not provide sample article reports or a standard report folder for articles.



Tip: The *Knowledge Base Dashboards and Reports* AppExchange package provides over two dozen reports that help you monitor the knowledge base and analyze usage metrics.

#### IN THIS SECTION:

#### 1. Create a Folder for Article Reports

Create a public folder where you can store article reports for your users.

#### 2. Article Reports

Create a custom report type to report on Salesforce Knowledge article data.

#### 3. Create an Article Report

Run your custom report on your Salesforce Knowledge articles and save them to your article reports folder.

### 4. Fields Available on Salesforce Knowledge Reports

The fields you can use in a knowledge report depend on the type of information you are reporting on.

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Salesforce Knowledge is available in the **Unlimited** Edition with Service Cloud.

Salesforce Knowledge is available for an additional cost in: Essentials,
Professional, Enterprise,
Performance, and
Developer Editions. For more information, contact your Salesforce representative.

### **USER PERMISSIONS**

To create or update custom report types:

 Manage Custom Report Types

To create a public reports folder:

#### **Create a Folder for Article Reports**

Create a public folder where you can store article reports for your users.

- 1. In the Report Folder section of the Reports tab, click **Create New Folder**.
- 2. Enter Article Reports in the Folder Label field.
- 3. Optionally, modify the Group Unique Name.
- **4.** Choose a Public Folder Access option.

  Select read/write if you want users to be able to add and remove reports.
- **5.** Choose a folder visibility option.
- 6. Click Save.

Reports you store in this folder are available on the Reports tab.

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

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### USER PERMISSIONS

To create or update custom report types:

 Manage Custom Report Types

To create a public reports folder:

#### **Article Reports**

Create a custom report type to report on Salesforce Knowledge article data.

To create a custom report:

1. From Setup, enter Report Types in the Quick Find box, then select Report Types and click New Custom Report Type.

See Create a Custom Report Type

2. In the Primary Object drop-down menu, select the article-related object you want to report on:

| Primary Object                            | Description   |
|---|---|
| Article types (Classic<br>Knowledge only) | Compare information such as creation dates, published channels, and number of associated cases for your custom article type, such as an FAQ. To access any history and custom fields for the custom article type, add the article type's version as a secondary object.   |
| Knowledge Articles                        | Compare information about individual articles, such as their creation dates, published channels, and number of associated cases. If you choose this custom report type, you can also include article view and vote statistics. In reports using the Knowledge Articles primary object, each article has five records (rows): one for each channel (All Channels, Internal App, Customer, Partner, and Public Knowledge Base). |
| Knowledge Article Searches                | Analyze the number of searches per day, month, or year for each channel and role. Searches aren't differentiated between internal and external, and all searches are logged as Internal App. Searches in communities aren't checked.  |
| Knowledge Article Version                 | Compare information about individual translations, such as their creation dates, published channels, and number of associated cases. If you choose this custom report type, you can also include article view and vote statistics.  |
| Article Version History                   | Compare information about individual article versions, such as their creation dates, published channels, and number of associated cases.  |
| Knowledge Article Views                   | Analyze the number of views per day, month, or year for each channel and role.  |
| Knowledge Article Votes                   | Analyze the number of votes per day, month, or year for each channel and role.  |
| Knowledge Keyword Search                  | See which keywords users are looking for in your knowledge base.  |
| Knowledge Search Activity                 | <ul> <li>Analyze the number of searches per day, month, or year for each channel and language.</li> <li>For each search, see the:</li> </ul>  |

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Salesforce Knowledge is available in the **Unlimited** Edition with Service Cloud.

Salesforce Knowledge is available for an additional cost in: Essentials,
Professional, Enterprise,
Performance, and
Developer Editions. For more information, contact your Salesforce representative.

### **USER PERMISSIONS**

To create or update custom report types:

Manage Custom Report Types

To create a public reports folder:

- Date
- ID and title of the article that was clicked
- See which keywords users are looking for in your knowledge base.
- For each keyword, see the average number of:
  - Results
  - Articles that appear in the search results
- For each article, see the average number of:
  - Clicks
  - Unique users who clicked it
- **3.** Complete the required fields and click **Save**.

In the Store in Category drop-down menu, we recommend choosing **Customer Support Reports** or **Other Reports**. This is the category where users find the custom report type on the Reports tab.

**4.** Make your choices on the Define Report Records Set page.

| Primary Object                         | Available Secondary Objects                                    |
|--|--|
| Article types (Classic Knowledge only) | Article type Versions  |
| Knowledge Articles                     | Article View Statistics, Article Vote Statistics, Case Article |
| Knowledge Article Searches             | None   |
| Knowledge Article Version              | Article View Statistics, Article Vote Statistics               |
| Article Version History                | None   |
| Knowledge Article Views                | None   |
| Knowledge Article Votes                | None   |
| Knowledge Keyword Search               | None   |
| Knowledge Search Activity              | None   |
|  |  |

#### 5. Click Save.

**6.** As needed, remove and rearrange fields from your report layout.

To learn which fields are available on each primary object, see Fields Available on Salesforce Knowledge Reports on page 944.

Note: An article's score is calculated slightly differently in the API than it is in a custom report. We recommend standardizing on one or the other and not attempting to use both.

#### **Create an Article Report**

Run your custom report on your Salesforce Knowledge articles and save them to your article reports folder.

Using your custom report types, create article reports and save them to your article reports folder.

- 1. On the Reports tab, click **New Report**.
- **2.** Choose the category where your custom report types are stored; for example, **Customer Support Reports** or **Other Reports**.

The Cases with Articles report is available by default in the Customer Support Reports folder.

- **3.** Find your report type and click **Create**.
- **4.** When viewing your report, click **Save As** and save it in the new Article Reports folder to make the report available to other users.

#### Note:

- In reports using the Knowledge Article custom report type, there are at least five rows per article (one for each channel, including "All Channels").
- Daily values are reported independently for the last 90 days and monthly values for the last 18 months. After those time periods, use the monthly aggregate and yearly aggregate values, respectively.
- In reports using the Knowledge Article Votes, Knowledge Article Views, or Knowledge
  Article Searches custom report types, each row represents a day, channel, and role
  combination. For example, if a user with the Kingmaker role views articles in the internal
  app and the next day the same reader views more articles in the internal app, the Article
  Views report has two rows: one for each unique date.
- In reports using Knowledge Article Version (KAV), except Knowledge Article Version
  History, you can filter by data category. You can add up to four filters and set their logic
  to AT, ABOVE, BELOW, or ABOVE OR BELOW. The logic between filters is OR. You can use
  the same category group multiple times, however, you must use the same operator each
  time.
- To report on Approval Processes for Knowledge Articles, use Process Instance and Process Instance Node when creating a custom report type. Then filter the report on object type, which is the article type.

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Salesforce Knowledge is available in the **Unlimited** Edition with Service Cloud.

Salesforce Knowledge is available for an additional cost in: Essentials,
Professional, Enterprise,
Performance, and
Developer Editions. For more information, contact your Salesforce representative.

### **USER PERMISSIONS**

To create or update custom report types:

 Manage Custom Report Types

To create a public reports folder:

### Fields Available on Salesforce Knowledge Reports

The fields you can use in a knowledge report depend on the type of information you are reporting on.

The following tables list the available fields by primary object for Salesforce Knowledge reports. Fields Available on Article types (Classic Knowledge only) Reports

The Article Type primary object allows you to add a secondary object of the article type version.

#### **Table 15: Article Type Report Primary Object Fields**

| Field                        | Description  |
|------------------------------|--|
| Archived By                  | User who archived the article.   |
| Archived Date                | Date the article was archived.   |
| Article Number               | Unique number automatically assigned to the article.   |
| Article Type ID              | The ID associated with the article type.   |
| Case Association             | Number of cases attached to the article.   |
| Created By                   | User who created the article.  |
| Created Date                 | Date the current article version was created. If the article has been published more than once, this is the latest draft date. To create reports that use the original article creation date, first create a Custom Report Type that joins the Knowledge Article (ka) and Knowledge Article Version (kav) objects for a given article type to allow for use of the created date on the record in the Knowledge Article object, rather than the one for the Knowledge Article Version record. |
| Custom fields                | Any custom fields created on the article types. Add the article type's version as a secondary object to access any custom fields for the article type.   |
| First Published Date         | Date the article was originally published.   |
| Knowledge Article<br>Version | The article's version number.  |
| Last Modified By             | User who changed the article most recently.  |
| Last Modified Date           | Date the article was last changed. The last modified date of a draft article is the time the draft was saved. The last modified date of a published article is time the article was most recently published.   |
| Last Published Date          | Date the article was last published.   |
| Master Language              | The original language of the article.  |

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Salesforce Knowledge is available in the **Unlimited** Edition with Service Cloud.

Salesforce Knowledge is available for an additional cost in: Essentials,
Professional, Enterprise,
Performance, and
Developer Editions. For more information, contact your Salesforce representative.

### **USER PERMISSIONS**

To create or update custom report types:

Manage Custom Report Types

To create a public reports folder:



Note: Currently you can't use Knowledge Article Version and Last Modified Date in the same report.

|                                 | Table 16: Article Type Report Secondary Object Fields  |
|---------------------------------|--|
| Field                           | Description  |
| Archived By                     | User who archived the article.   |
| Article Type                    | The article type associated with the article.  |
| Created By                      | User who created the article.  |
| Created Date                    | Date the current article version was created. If the article has been published more than once, this is the latest draft date. To create reports that use the original article creation date, first create a Custom Report Type that joins the Knowledge Article (ka) and Knowledge Article Version (kav) objects for a given article type to allow for use of the created date on the record in the Knowledge Article object, rather than the one for the Knowledge Article Version record. |
| Custom fields                   | Any custom fields created on the article types. Add the article type's version as a secondary object to access any custom fields for the article type.   |
| Is Latest Version               | Indicates if the article is the most recent version.   |
| Is Master Language              | Indicates that the article is not a translation, but the original article.   |
| Knowledge Article<br>Version ID | Unique ID automatically assigned to the article translation.   |
| Language                        | The article's language.  |
| Last Modified By                | User who changed the article most recently.  |
| Last Modified Date              | Date the article was last changed. The last modified date of a draft article is the time the draft was saved. The last modified date of a published article is time the article was most recently published.   |
| Out of Date                     | Indicates that the master article has been updated since this translation was published.   |
| Publication Status              | Indicates whether the article or translation is in progress (draft), published, or archived.   |
| Summary                         | Description of the article provided by the author.   |
| Title                           | The article's title.   |
| Translation Completed Date      | Date the translation was completed.  |
| Translation Exported Date       | Date the article was exported for translation.   |
| Translation Imported Date       | Date the translation was imported.   |
| URL Name                        | Text used as hyperlink for the article.  |
| Validation Status               | Indicates if the article is valid or not.  |
| Version Number                  | The version number of the article.   |

| Field                               | Description   |
|-------------------------------------|---|
| Visible in Customer                 | Indicates that the article is published in the Customer Portal.             |
| Visible in Internal App             | Indicates that the article is published in the internal app (Articles tab). |
| Visible in Partner                  | Indicates that the article is published in the partner portal.              |
| Visible in Public<br>Knowledge Base | Indicates that the article is published in the public knowledge base.       |

Fields Available on Knowledge Articles Reports

| Field                           | Description  |
|---------------------------------|--|
| Article Number                  | Unique number automatically assigned to the article.   |
| Article Type                    | The article type associated with the article.  |
| Case Association Count          | Number of cases attached to the article.   |
| Created By                      | User who created the article.  |
| Created Date                    | Date the current article version was created. If the article has been published more than once, this is the latest draft date. To create reports that use the original article creation date, first create a Custom Report Type that joins the Knowledge Article (ka) and Knowledge Article Version (kav) objects for a given article type to allow for use of the created date on the record in the Knowledge Article object, rather than the one for the Knowledge Article Version record. |
| First Published Date            | Date the article was originally published.   |
| Is Latest Version               | Indicates if the article is the most recent version.   |
| Knowledge Article<br>Version ID | Unique ID automatically assigned to the article translation.   |
| Last Modified By                | User who changed the article most recently.  |
| Last Modified Date              | Date the article was last changed. The last modified date of a draft article is the time the draft was saved. The last modified date of a published article is time the article was most recently published.   |
| Last Published Date             | Date the article was last published.   |
| Summary                         | Description of the article provided by the author.   |
| Title                           | The article's title.   |
| URL Name                        | Text used as hyperlink for the article.  |
| Validation Status               | Indicates if the article is valid or not.  |
| Version Number                  | The version number of the article.   |
| Visible in Customer             | Indicates that the article is published in the Customer Portal.  |
| Visible in Internal App         | Indicates that the article is published in the internal app (Articles tab).  |

| Field                               | Description   |
|-------------------------------------|---|
| Visible in Partner                  | Indicates that the article is published in the partner portal.        |
| Visible in Public<br>Knowledge Base | Indicates that the article is published in the public knowledge base. |

Fields Available on Knowledge Article Searches Reports

| Field            | Description  |
|------------------|--|
| Channel          | The channel that's applicable to the article. Possible values are All Channels, Internal App, Customer, Partner, and Public Knowledge Base.  |
| Count            | The number of article searches applicable to the duration shown (day, month, or year).   |
| Cumulative Count | The total number of article searches for the history of the record.  |
| Date             | Last date on which an article search took place for the record. All rows represent a date, channel, and role combination.  |
| Duration         | The time period the search count is applied to. Possible values are <code>Daily</code> , <code>Monthly</code> , and <code>Yearly</code> . For example, a record where the Count is 70 and the Duration is Monthly indicates that 70 searches took place over the past month. Totals are aggregated daily for the current month, monthly from the past full month through the past full year, and yearly beyond that. |
| Related Role     | Name of the role that applies to the record. Each row in the report represents searches per channel per role.  |

Fields Available on Knowledge Article Version Reports

| Field                  | Description  |  |
|------------------------|--|--|
| Archived By            | User who archived the article.   |  |
| Archived Date          | Date the article was archived.   |  |
| Article Number         | Unique number automatically assigned to the article.   |  |
| Article Type           | The article type associated with the article.  |  |
| Case Association Count | Number of cases attached to the article.   |  |
| Created By             | User who created the article.  |  |
| Created Date           | Date the current article version was created. If the article has been published more than once, this is the latest draft date. To create reports that use the original article creation date, first create a Custom Report Type that joins the Knowledge Article (ka) and Knowledge Article Version (kav) objects for a given article type to allow for use of the created date on the record in the Knowledge Article object, rather than the one for the Knowledge Article Version record. |  |
| First Published Date   | Date the article was originally published.   |  |
| Is Latest Version      | Indicates if the article is the most recent version.   |  |

| Field                                | Description  |
|--------------------------------------|--|
| Is Master Language                   | Indicates that the article is not a translation, but the original article.   |
| Knowledge Article<br>Version ID      | Unique ID automatically assigned to the article translation.   |
| Language                             | The article's language.  |
| Last Modified By                     | User who changed the article most recently.  |
| Last Modified Date                   | Date the article was last changed. The last modified date of a draft article is the time the draft was saved. The last modified date of a published article is time the article was most recently published. |
| Date the article was last published. | Date the article was last published.   |
| Master Language                      | The original language of the article.  |
| Out of Date                          | Indicates that the master article has been updated since this translation was published.   |
| Publication Status                   | Indicates whether the article or translation is in progress (draft), published, or archived.   |
| Summary                              | Description of the article provided by the author.   |
| Title                                | The article's title.   |
| Translation Completed Date           | Date the translation was completed.  |
| Translation Exported Date            | Date the article was exported for translation.   |
| Translation Imported Date            | Date the translation was imported.   |
| URL Name                             | Text used as hyperlink for the article.  |
| Validation Status                    | Indicates if the article is valid or not.  |
| Version Number                       | The version number of the article.   |
| Visible in Customer                  | Indicates that the article is published in the Customer Portal.  |
| Visible in Internal App              | Indicates that the article is published in the internal app (Articles tab).  |
| Visible in Partner                   | Indicates that the article is published in the partner portal.   |
| Visible in Public<br>Knowledge Base  | Indicates that the article is published in the public knowledge base.  |

Fields Available on Knowledge Article Views Reports

You can add up to 6of the 8fields below.

| Field            | Description  |
|------------------|--|
| Channel          | The channel that's applicable to the article. Possible values are All Channels, Internal App, Customer, Partner, and Public Knowledge Base.  |
| Count            | The number of article views applicable to the duration shown (day, month, year).   |
| Cumulative Count | The total number of article views for the history of the record.   |
| Date             | Last date on which an article view took place for the record. All rows represent a date, channel, and role combination.  |
| Duration         | The time period the search count is applied to. Possible values are Daily, Monthly, and Yearly. For example, a record where the Count is 70 and the Duration is Monthly indicates that 70 searches took place over the past month. Totals are aggregated daily for the current month, monthly from the past full month through the past full year, and yearly beyond that. |
| Related Role     | Name of the role that applies to the record.   |
| Score            | Article's average view rating. Scoresake into account a half-life calculation. Every 15 days, if an article has not been viewed its average rating moves up or down. This calculation ensures that over time, older or outdated articles don't maintain artificially high or low ratings compared to newer, more frequently viewed articles.                               |
| Total Views      | Number of times a published article has been viewed.   |

Fields Available on Knowledge Article Votes Reports

| Field            | Description  |
|------------------|--|
| Channel          | The channel that's applicable to the article. Possible values are All Channels, Internal App, Customer, Partner, and Public Knowledge Base.  |
| Count            | The number of article votes applicable to the duration shown (day, month, year).   |
| Cumulative Count | The total number of article votes for the history of the record.   |
| Date             | Last date on which an article vote took place for the record. All rows represent a date, channel, and role combination.  |
| Duration         | The time period the search count is applied to. Possible values are <code>Daily</code> , <code>Monthly</code> , and <code>Yearly</code> . For example, a record where the Count is 70 and the Duration is Monthly indicates that 70 searches took place over the past month. Totals are aggregated daily for the current month, monthly from the past full month through the past full year, and yearly beyond that. |
| Related Role     | Name of the role that applies to the record.   |

Fields Available on Knowledge Keyword Search Reports

| Field   | Description  |
|---------|--|
| Channel | The channel that's applicable to the article. Possible values are All Channels, Internal |
|         | App, Customer, Partner, and Public Knowledge Base.                                       |

| Field    | Description  |  |
|----------|--|--|
| Count    | The number of keyword searches applicable to the duration shown (day, month, year).  |  |
| Date     | Last date on which a keyword search took place for the record. All rows represent a date, channel, and role combination.   |  |
| Duration | The time period the search count is applied to. Possible values are Daily, Monthly, and Yearly. For example, a record where the Count is 70 and the Duration is Monthly indicates that 70 searches took place over the past month. Totals are aggregated daily for the current month, monthly from the past full month through the past full year, and yearly beyond that. |  |
| Found    | Indicates whether the keyword shown was found during a search of the knowledge base.   |  |
| Keyword  | Search term used to search published articles in the knowledge base.   |  |

Fields Available on Knowledge Search Activity Reports

| Field                 | Description  |
|-----------------------|--|
| Average Click Rank    | The order in which the article appeared in search results when results are sorted by relevance and when readers clicked it from the list of results.   |
| Channel               | The channel that's applicable to the article. Possible values are All Channels, Internal App, Customer, Partner, and Public Knowledge Base.  |
| Clicked Article Title | The title of the clicked article taken when the search results are sorted by relevance by the reader.  |
| Duration              | The time period the search count is applied to. Possible values are <code>Daily</code> , <code>Monthly</code> , and <code>Yearly</code> . For example, a record where the Count is 70 and the Duration is Monthly indicates that 70 searches took place over the past month. Totals are aggregated daily for the current month, monthly from the past full month through the past full year, and yearly beyond that.  Note: Activity totals are collected nightly and aren't in real time. |
| Language              | The language filter that's applied to the reader's search.   |
| Number of Results     | The number of search results that were returned for the search term. If Duration is also included, this value is aggregated based on the time period specified.  |
| Number of Searches    | The number of searches for the duration that's shown (day, month, or year).  |
| Number of Users       | The number of individual users who clicked the article.  |
| Search Date           | The date of the search.  |
| Search Term           | The first 100 characters of the search term that was used to search published articles in the knowledge base.  |

### Live Agent Session Reports

Use Live Agent Session reports to consolidate data about agents' activities while they chat with customers—for example, how long agents are online or how many chat requests are assigned to them.

A report type defines the set of records and fields available to a report based on the relationships between a primary object and its related objects. Reports display only records that meet the criteria defined in the report type. You can create a custom report type for Live Agent sessions to aggregate data about your agents' activity while they support customers. These reports include data for all of the chats that occurred during a specific Live Agent session.

Customize Live Agent session reports to include columns of information about any of the following categories, as well as any custom fields related to Live Agent sessions:

| Column Name                              | Description  |
|--|--|
| Agent: Full Name                         | Name of the agent associated with the session.   |
| Assistance Flags Lowered (Agent)         | Number of times an agent lowered an assistance flag during a Live Agent Session.   |
| Assistance Flags Lowered (Supervisor)    | Number of times a supervisor lowered an assistance flag during an agent's Live Agent Session.                              |
| Assistance Flags Raised                  | Number of times an agent raised an assistance flag during a Live Agent Session.  |
| Chat Requests Assigned                   | Number of chat requests assigned to an agent.  |
| Chat Requests Declined (Manually)        | Number of chat requests declined manually by an agent.   |
| Chat Requests Declined (Push<br>Timeout) | Number of chat requests that timed out while assigned to an agent.   |
| Chat Requests Engaged                    | Number of chats in which an agent was engaged during the session.  |
| Created By: Full Name                    | Full name of the creator of the session record.  |
| Created Date                             | Date the session record was created.   |
| Last Modified By: Full Name              | Full name of the person who last modified the session record.  |
| Last Modified Date                       | Date the session record was last modified.   |
| Live Agent Session ID                    | ID of the Live Agent session record.   |
| Live Agent Session Name                  | Automatically generated ID of the Live Agent session.  |
| Login Time                               | Time and date the agent logged in to the session.  |
| Logout Time                              | Time and date the agent logged out of the session.   |
| Time Idle                                | Total amount of time in seconds an agent was not engaged in chats during a session. The following formula indicates how an |

### EDITIONS

Live Agent is available in: Salesforce Classic, Lightning Experience

Live Agent is available in: **Performance** Editions and
in **Developer** Edition orgs
that were created after June
14, 2012

Live Agent is available in: **Unlimited** Edition with the Service Cloud

Live Agent is available for an additional cost in: **Enterprise** and **Unlimited** Editions

|                        | agent's idle time is calculated: (Time Spent Online $+$ Time Spent Away) - Time Spent in Chats $=$ Time Idle. |  |
|------------------------|---|--|
| Time Spent at Capacity | Total amount of time in seconds in which an agent's queue was full.   |  |
| Time Spent Away        | Total amount of time in seconds an agent spent in "Away" status.  |  |
| Time Spent in Chats    | Total amount of time in seconds an agent spent engaged in chats.  |  |
| Time Spent Online      | Total amount of time in seconds an agent spent online.  |  |

### Report on Partners

Some opportunities involve partner relationships. Use this report to identify and analyze those relationships.

To report on all partnerships or primary partnerships within opportunities:

- 1. From the Reports tab, choose the Partner Opportunities report.
- **2.** Choose **Customize** to change the report and view only primary partner relationships. Add a field filter where *Primary equals 1*.

In any other opportunity report, when you customize the report to display the Partner column, only the primary partner displays.

You can also run the Partner Accounts report to analyze the partnerships of your accounts.

### EDITIONS

Available in: Salesforce Classic

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

### **USER PERMISSIONS**

To report on partners:

Read on accounts or opportunities

AND

**Run Reports** 

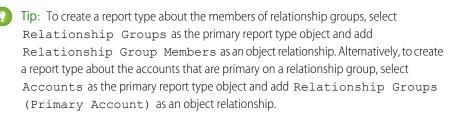
#### Report on Relationship Groups

You can report on relationship groups and relationship group members if your administrator has enabled custom report types for those custom objects.

Custom report types are the only way to make relationship group reports available for your users—Salesforce does not provide sample relationship group reports or a standard report folder for relationship groups.

Administrators can create a public folder of relationship group reports as follows:

1. Create a custom report type for relationship group objects.



- **2.** Create a new public folder for relationship group reports. This step requires the "Manage Public Reports" permission.
- **3.** Using your custom report type, create one or more new custom reports for relationship groups. Assign the reports to the new relationship groups reports folder you created.

After completing these steps, a folder of relationship group reports will be available to users on the Reports home page.

### **Enable the Account Owner Report**

The Account Owner report lists all accounts and who owns them.

Organizations that have their organization-wide sharing access level set to Private for accounts may want to restrict users from running the Account Owner report.

To show or hide this report:

- From Setup, enter Account Owner Report in the Quick Find box, then select
   Account Owner Report. This option is available only in organizations that have a private
   account sharing model.
- 2. Select the checkbox to allow all users to run this report. If you leave the box unchecked, only administrators and users with the "View All Data" permission can run this report.
- 3. Click Save.

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: Salesforce for Wealth Management

### **USER PERMISSIONS**

To create or update custom report types:

 Manage Custom Report Types

To delete custom report types:

Modify All Data

### **EDITIONS**

Available in: both Salesforce Classic and Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions.

### **USER PERMISSIONS**

To show or hide account owner report:

Customize Application

#### Report on File Search Activity

Use a report to determine the top 300 search term queries for file searches and to identify which content is missing or needs to be renamed based on users' search terms and the click-rank.

| User Permissions Needed                  |  |
|--|--|
| To create or update custom report types: | "Manage Custom Report Types"   |
| To create a public reports folder:       | "Manage Public Reports"  |
| To run the File Search Activity report:  | "Run Reports" AND "View All Data" OR "Content<br>Administrator". Users with "Manage Library" for<br>the library don't need the "View All Data" or<br>"Content Administrator" permissions to run the<br>report. |

### EDITIONS

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Salesforce Files available in: **All** Editions, except
Customer Portals

Custom report types are the only way to make reports about file search activity available for your users—Salesforce does not provide sample file search activity reports or a standard report folder.



Note: Activity totals are collected nightly and aren't in real time.

### **Primary Object for File Search Activity Report**

When you create a custom report type, select File Search Activity for the Primary Object.

#### **Available File Search Activity Report Fields**

The following table lists the available fields for File Search Activity reports.

| Field                     | Description  |
|---------------------------|--|
| Average Click Rank        | The order in which the file appeared in search results when users clicked it from the list of results.   |
| Average Number of Results | The number of search results that were returned for the search term. If Duration is also included, this value is aggregated based on the time period specified.  |
| Duration                  | The time period the search count is applied to. Possible values are Daily, Monthly, and Yearly. For example, a record where the Count is 70 and the Duration is Monthly indicates that 70 searches took place over the past month. Totals are aggregated daily for the current month, monthly from the past full month through the past full year, and yearly beyond that. |
| Language                  | The language filter that's applied to the user's search.   |
| Number of Searches        | The number of searches for the duration that's shown (day, month, or year).  |
| Number of Users           | The number of individual users who clicked the file.   |

| Field        | Description  |
|--------------|--|
| Search Date  | The date of the search.  |
| Search Terms | The first 100 characters of the search term that was used to search published files. |

#### SEE ALSO:

Access to Report Folders Creating and Editing Folders Create a Custom Report Type Create a Report

Report on Chatter Top 100 Feed Item Views with Interaction Count Report

Get a report on the top 100 feed item views in your organization or community with the primary object Interaction Count Report. Knowing the posts that people are looking at most is a great way to get insight into current Chatter trends. Actions counted as views include liking, commenting, and viewing a feed item detail. View counts are not unique. For example, a user can add three comments to a post, and that is counted as three views. Once you set up the report, it's run weekly.

| User Permissions Needed                  |                              |
|--|------------------------------|
| To create or update custom report types: | "Manage Custom Report Types" |
| To create a public reports folder:       | "Manage Public Reports"      |

Custom report types are the only way to make reports about the 100 top feed item views. Salesforce doesn't provide sample top view activity reports or a standard report folder.

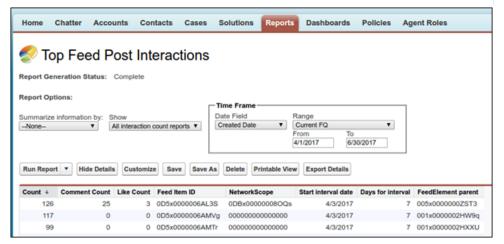
### **EDITIONS**

Available in: both Lightning Experience and Lightning communities

Chatter is available in:

Essentials, Group, Professional, Enterprise, Performance, Unlimited, Developer, and Contact Manager Editions

Communities are available in: Enterprise, Performance, Unlimited, and Developer Editions



Note: Reports on feed activities don't include information about system-generated posts, such as feed tracked changes.

### **Primary Object for Interaction Count Report**

When you create a custom report type, select **Interaction Count Reports** for the **Primary Object**.

### **Available Interaction Count Report Fields**

The following table lists the available fields for Interaction Count reports.

| Field               | Description  |
|---------------------|--|
| Comment Count       | The number of comments on a post   |
| Count               | The number of views on a post  |
| Days for interval   | How often the report is run—currently 7, for every seven days (this is a fixed value)  |
| FeedElement parent  | The ID of the group, profile, record, or other entity that is the parent to the feed where the content is posted   |
| Feed Item ID        | The ID of the post   |
| Like Count          | The number of likes on the post  |
| NetworkScope        | The scope of the network where this feed item is available.  This field always has a value. For the default network, it's 00000000000000. If it's posted in a community, it has the ID of the community (also known as the Networkld). If the value contains an "I," the post is parented by a record, like an account, an opportunity, or some other record type. |
| Start interval Date | The date that marks the start of the seven-day run interval  |

Related Articles and Questions Reports

Create custom report types so users can report on click-through rates on related articles and questions. Salesforce Einstein suggests related articles and questions in communities. Use the click-through rates reports to create content around the most accessed articles and questions, empowering your customers to find the information they need.

As an admin, you can create custom report types so users can analyze which related articles and questions are most clicked in a community.

To create a folder of reports for your users:

- 1. Create a custom report type using Related Content Metrics as the primary object.
- 2. Create a public folder for related content metric reports. This step requires the Manage Public Reports permission.
- **3.** Using your custom report type, create one or more new custom reports. For example, you can make specific reports on related questions click-through rates and related articles click-through rates. Assign the reports to the new reports folder you created.

After completing these steps, a folder of related content metrics reports is available to your users on the Reports home page.

#### Community Case Deflection from Discussions and Articles

Get insight into how well the Contact Support Form and Case Deflection components actually deflect cases from being created. Using the Case Deflection Dashboard, get real-time metrics on potential and confirmed case deflections, the most helpful articles and discussions, and the least helpful articles and discussions.

As an admin, you can create custom report types so users can analyze which articles and discussions are most useful in deflecting cases in a community.

To create a folder of reports for your users:

- 1. Create a custom report type using Community Case Deflection Metrics as the primary object.
- 2. Create a public folder for the reports. This step requires the Manage Public Reports permission.
- **3.** Using your custom report type, create one or more new custom reports. For example, you can make specific reports on which articles and discussions helped deflect cases, and which ones were unsuccessful at deflecting cases. Assign the reports to the new reports folder you created.

After completing these steps, a folder of community case deflection metrics reports is available to your users on the Reports home page.

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

### **USER PERMISSIONS**

To create or update custom report types:

 Manage Custom Report Types

To delete custom report types:

Modify All Data

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

### **USER PERMISSIONS**

To create or update custom report types:

 Manage Custom Report Types

To delete custom report types:

Modify All Data

Report on External Documents Attached to Cases

Create a report to see how many and which specific external documents are being attached to cases. Use this information to see which external sources have the most impact on closing cases. This report is helpful when you have set up Salesforce Federated Search, which gives users access to external search results when using the Knowledge One Widget. Users can attach external documents to cases only if Chatter is enabled.

- 1. From Setup, enter Report Types in the Quick Find box, then select Report Types.
- 2. Click New Custom Report Type.
- **3.** Select **Cases** as the Primary Object for your custom report type.
- **4.** Enter the **Report Type Label**. For example, *Cases with External Documents*. The Report Type Name automatically fills.
- **5.** Entera description for your custom report type. For example, Reports on the external documents attached to cases.
- **6.** To indicate where to store the custom report type, select the **Other Reports** category.
- 7. Select the deployment option of your choice. Click **Next**.
- **8.** On the next page, **Define Report Records Set**, relate another object and create an A to B Relationship. Select **External Documents** as the child object for your custom report type. Leave **Each "A" record must have at least one related "B" record** selected. Click **Save**.
- **9.** Leaving Setup, click the **Reports** tab.
- **10.** Click **New Report**. From the Other Reports folder, select **Cases with External Documents**, or the name of the report you created.
- 11. Click Create.
- 12. If they're not already included, from the Cases object in the left pane, drag and drop the Case ID and Case Number fields onto the report. From the External Object: Object Name object, drag and drop the Display URL and Title fields. Drag and drop other fields that you want to include in the report.
- **13.** Click **Run Report**. Save the report.

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: Salesforce
Knowledge is available in
Performance and
Developer Editions and in
Unlimited Edition with the
Service Cloud. Salesforce
Knowledge is available for
an additional cost in:

**Professional, Enterprise,** and **Unlimited** Editions.

### **USER PERMISSIONS**

To create or update custom report types

 "Manage Custom Report Types"

To delete custom report types

"Modify All Data"

To run reports

"Run Reports"

To create, edit, and delete reports

 "Create and Customize Reports"

# Filter Report Data

## EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

What if your report gives you more data than you need? Use filters to pare down your report until it only shows the data that you want.

In Salesforce Classic, filter your report from the report builder.

In Lightning Experience, there are two ways to filter reports: either from the Report Builder or while viewing a report. To add or edit report filters, use the Report Builder. To edit existing, unlocked report filters while you're reading a report, run the report and then edit filters directly from the filters pane ( ). You can edit existing filters from the filters pane, but you can't add new ones. Each report supports up to 20 field filters.



**Note**: In Lightning Experience, these filters are available in the Report Builder, but are not shown in the filter panel when viewing a report. Even though the filters are not shown, they still filter the report.

- Row limit filters
- Cross filters
- Historical field filters
- Standard filters (except for scope and date filters)
- From the Lightning Experience report builder, click \(\bigvarepsilon\) FILTERS. Then, choose a field from the Add Filter... picklist.

From the Salesforce Classic report builder, open the **Add** dropdown menu and select a filter type:

- **Field Filter** to filter on fields. For example, use a field filter to filter by Account Name equals Acme.
- **Filter Logic** to customize how existing filters apply to your report. Each filter is assigned a number. If you'd like your report to return records that meet the criteria of Filter 1 and either Filter 2 or Filter 3, use this filter logic: Filter 1 AND (Filter 2 OR Filter 3). Filter logic requires at least one field filter.

To add filter logic in the Lightning Experience report builder, click > Add Filter Logic.

• Cross Filter to filter on one object's relationship to another object. Cross filter on Accounts with Opportunities so that your report only returns Accounts that have Opportunities. Add a subfilter to a cross filter to further filter by the second object. For example, the Opportunity subfilter Amount greater than 50000 causes your report to return Accounts that have Opportunities worth more than \$50,000.00.

Cross filters aren't available in the Lightning Experience report builder.

 Row Limit to limit the number of report results in tabular reports. To see which five Accounts have the largest annual revenue, set a row limit of Top 5 Accounts by Annual Revenue.

Row limit filters aren't available in the Lightning Experience report builder.

Standard filters, such as date filters, are applied by default to most objects. Look for them underneath the Add dropdown menu and customize them as necessary. Different objects have different standard filters.

**2.** Enter filter criteria.

For help entering filter criteria, see Filter Operators Reference and Add Filter Logic.

3. Optionally, to prevent people from editing a field filter while reading your report in Lightning Experience, check **Locked**.

### **USER PERMISSIONS**

To add or edit a filter:

Legacy Folder Sharing

Create and Customize Reports

**AND** 

Report Builder

#### Enhanced Folder Sharing

Create and Customize Reports

AND

Report Builder

To lock or unlock filters so that users can't edit them while viewing a report in Lightning Experience:

Legacy Folder Sharing

Create and Customize Reports

**AND** 

Report Builder

### Enhanced Folder Sharing

Create and Customize Reports

**AND** 

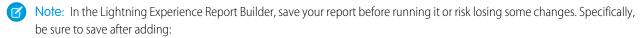
Report Builder

To edit a filter while viewing a report in Lightning Experience:

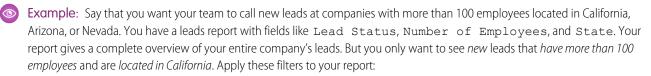
Run Reports

#### 4. Click Save.

5. To read your filtered report, click **Run Report**. In new reports, the Run Report button doesn't appear until you save your report.



- Row limit filters
- Cross filters
- Formula fields
- Bucket fields



- 1. Lead Status equals New
- 2. Number of Employees greater than 100
- 3. State includes California, Arizona, Nevada

Now your leads report returns only the leads you need.

#### IN THIS SECTION:

#### Add Filter Logic

Filter logic governs how and when filters apply to your report.

#### Filter Report Data by Role Hierarchy

Want to see records based on org structure or job function? Get records owned by everyone in a job role (like sales manager) and their subordinate roles (like sales person) by filtering your report on a role.

#### Filter Across Objects with Cross Filters

Use a cross filter to fine-tune your results by including or excluding records from related objects and their fields, without having to write formulas or code. You can apply cross filters by themselves, or in combination with field filters.

#### Filter Reports Via URL Parameters in Lightning Experience

No need to futz with filters! Pass URL parameters to set filter values in Lightning Experience reports. When linking to reports or when bookmarking a report, add filter value parameters to the URL to customize how the report filters when opened. For example, bookmark your opportunities report and add a filter value parameter to specify whether you see New Business or Existing Business.

#### Filter Field History Reports by Old and New Values

Field history reports let you track changes in fields by adding an "Old Value" and a "New Value" column. With a field history report, each report row represents a change to a record. By filtering a field history report, you can answer questions like "Which opportunities have we closed so far this financial quarter?"

#### Filters Type Reference

Several different types of filters help you scope your report data: standard filters, field filters, cross filters, and row limit filters. Each filter type filters your report in different ways. This list of filter types helps you choose the right filter types for your report.

#### Filter Operators Reference

The operator in a filter is like the verb in a sentence. Operators specify how filter criteria relate to one another. Refer to this list of filter operators when setting filters on list views, reports, dashboards, and some custom fields.

#### Relative Date Filter Reference

Relative date filters let you filter on date fields using easy-to-understand, human-speech-inspired syntax.

#### Notes about Filtering on Types of Fields and Values

Keep these tips in mind when filtering on text fields, date fields, numeric values, picklist values, and blank or null values.

#### Tips for Filtering on Multiple Currencies

Tips for filtering on currency fields when your organization uses multiple currencies.

#### SEE ALSO:

Create or Clone a List View in Lightning Experience

### Add Filter Logic

Filter logic governs how and when filters apply to your report.

After adding a filter to your report, the filter is numbered. Your first filter becomes Filter 1 and your second filter becomes Filter 2. You apply filter logic based on these numbered filters.

For example, let's say you have a report of Accounts with fields like State, Annual Revenue, and Industry. Your report has these filters:

- 1. State includes California, Arizona, Nevada
- 2. Industry equals Banking
- **3.** Annual Revenue greater than 1000000

These three filters cause your report to return Accounts located in California, Arizona, or Nevada in the Banking industry with annual revenue greater than \$1,000,000. But what if you only want Accounts located in California, Arizona, or Nevada AND in the Banking industry, OR with annual revenue greater than \$1,000,000.00? Add filter logic to your report.

To add filter logic,

- From the Lightning Experience report builder, click FILTERS > > Add Filter Logic.
   From the Salesforce Classic report builder, click Add > Filter Logic.
- Enter each filter line number, separated by a filter logic operator.
   For example, (1 AND 2) OR 3 finds records that match both Filter 1 and Filter 2, or Filter 3.

Here's a complete table of filter logic operators:

| Operator | Definition  |
|----------|---|
| AND      | Finds records that match both values.   |
|          | 1 AND 2   |
| OR       | Finds records that match either value.  |
|          | 1 OR 2  |
| NOT      | Finds records that exclude values.  |
|          | For example, Filter 1 is <b>Industry equals</b> "Biotechnology". You set filter logic as <b>Not</b> |

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

### **USER PERMISSIONS**

To create, edit, and delete reports:

Create and Customize Reports

AND

Report Builder

To create custom list views:

 Read on the type of record included in the list

To create, edit, or delete public list views:

 Manage Public List Views

| Operator | Definition  |
|----------|---|
|          | <b>1</b> . Your report returns records which aren't equal to Biotechnology. |

#### 3. Click Save.

Now your report shows Banking industry Accounts in California, Arizona, and Nevada with any amount of revenue, and any Account with annual revenue above \$1,000,000.00.



### Note:

- Filter logic isn't available for all filters. For example, you can't use them for roll-up summary fields.
- On reports where object A may or may not have object B, you can't use the OR condition to filter across multiple objects. For example, if you enter filter criteria *Account Name starts with M OR Contact First Name starts with M*, an error message displays informing you that your filter criteria is incorrect.
- Except filter logic on lookup fields, you can't use filter logic if your field filters use any of the following fields:
  - Topics
  - Description
  - any Address Line 1, Address Line 2, Address Line 3 fields
  - Forecast Category
  - Campaign: Member Type
  - User: Profile Name
  - Login Status
  - custom long-text area fields

#### SEE ALSO:

Notes about Filtering on Types of Fields and Values

### Filter Report Data by Role Hierarchy

Want to see records based on org structure or job function? Get records owned by everyone in a job role (like sales manager) and their subordinate roles (like sales person) by filtering your report on a role

For example, to see opportunities owned by sales team members in California, filter your opportunity report by the role *Sales Manager - California*. Optionally, drill down on opportunities owned by a specific sales manager in California, narrow your results by a specific person in the role.



**Note**: Role hierarchy filters are only available for reports based on these standard report types:

- Activity
- Task
- Event
- Campaigns with Opportunities
- Forecasts
- Opportunity, except for:
  - Opportunities with Competitors
  - Opportunities with Contact Roles
  - Opportunities with Contact Roles and Products
  - Opportunity History
  - Opportunities with Partners
  - Opportunities with Teams
  - Opportunities with Teams and Products

Role hierarchy filters aren't available on reports based on custom report types.

### Filter by Role Hierarchy in Lightning Experience

In Lightning Experience, you can filter by role hierarchy while reading or editing a report.

#### While Editing a Report in the Lightning Experience Report Builder

- 1. Edit or create a report.
- 2. From the FILTERS tab, click Show Me.
- 3. From the Show Me menu, filter by a role.
- **4.** Optionally, further filter the report by narrowing results by a person in your selected role. Narrowing by a person shows records that belong to that person, and to people in roles that report to that person.
- **5.** To unselect roles, click **Clear Selection**.
- 6. Click Done
- 7. Click Save.

#### While Viewing a Report

- 1. If necessary, from the report run page, click  $extbf{Y}$  to open the Filters panel.
- 2. From the Filters panel, click Role Hierarchy.

### **EDITIONS**

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

### **USER PERMISSIONS**

To add or edit a filter

 Create and Customize Reports

AND

Report Builder

To lock or unlock filters so that users can't edit them while viewing a report in Lightning Experience

 Create and Customize Reports

**AND** 

Report Builder

To edit a filter while viewing a report in Lightning Experience

Run Reports

- **3.** From the Role Hierarchy menu, filter by a role.
- **4.** Optionally, further filter the report by narrowing results by a person in your selected role. Narrowing by a person shows records that belong to that person, and to people in roles that report to that person.

### Filter by Role Hierarchy in Salesforce Classic

- 1. From the report run page, click **Show Hierarchy**.
- 2. Drill down to a role.
- **3.** If you'd like the report to open already filtered by a role, then drill down to the role and then click **Customize** to open the report builder. Then, click **Report Properties** and check **Save Hierarchy Level**. From Report Properties, click **Save**, then, from the report builder, click **Save** again.

### Filter Across Objects with Cross Filters

Use a cross filter to fine-tune your results by including or excluding records from related objects and their fields, without having to write formulas or code. You can apply cross filters by themselves, or in combination with field filters.

- Watch a video:
- How to Use Cross Filters (Lightning Experience)
- Using Cross Filters in Reports (Salesforce Classic)

### EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

### **USER PERMISSIONS**

To add edit, or delete a cross filter in private reports:

Legacy Folder Sharing
Create and
Customize Reports

### Enhanced Folder Sharing

Create and Customize Reports

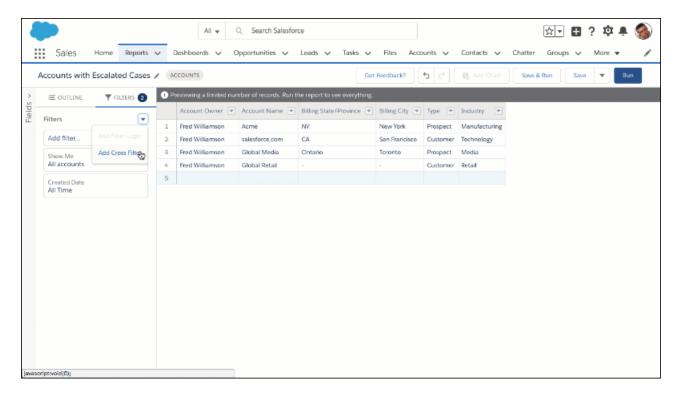
To add edit, or delete a cross filter in private and public reports:

Legacy Folder Sharing

Report Builder

### Enhanced Folder Sharing

Report Builder OR Report Builder (Lightning Experience)



To see which accounts have escalated cases, create an accounts report and add a cross filter. Set the cross filter to show accounts with cases. Then, filter cases for status equals escalated.

#### IN THIS SECTION:

#### 1. Create a Cross Filter

Use cross filters to include or exclude records in your report results based on related objects and their fields.

#### 2. Edit a Cross Filter

To change how a cross filter filters the primary or secondary object, edit it.

#### 3. Delete a Cross Filter

When you no longer need a cross filter, or a subfilter in a cross filter, delete it.

#### 4. Example: Use WITH in Cross Filters

Use cross filters to filter a report by an object's child objects using WITH conditions. For example, filter a report to show just accounts with cases.

#### 5. Example: Use WITHOUT in Cross Filters

Use cross filters to filter a report by an object's child objects using WITHOUT conditions. For example, filter a report to show just contacts without activities.

### 6. Example: Multiple Cross Filters and a Subfilter

Use cross filters to filter a report by an object's child objects using both WITH and WITHOUT conditions. For example, filter a report to show accounts that have cases but don't have activities.

#### 7. Cross Filter Considerations and Limits

As you create and work with cross filters, take note of these considerations and limits.

### Create a Cross Filter

Use cross filters to include or exclude records in your report results based on related objects and their fields.

- Watch a video:
- How to Use Cross Filters (Lightning Experience)
- Using Cross Filters in Reports (Salesforce Classic)

To see which accounts have escalated cases, create an accounts report and add a cross filter. Set the cross filter to show accounts with cases. Then, filter cases for status equals escalated.

### EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

### **USER PERMISSIONS**

To add edit, or delete a cross filter in private reports:

Legacy Folder Sharing
Create and
Customize Reports

### Enhanced Folder Sharing

Create and Customize Reports

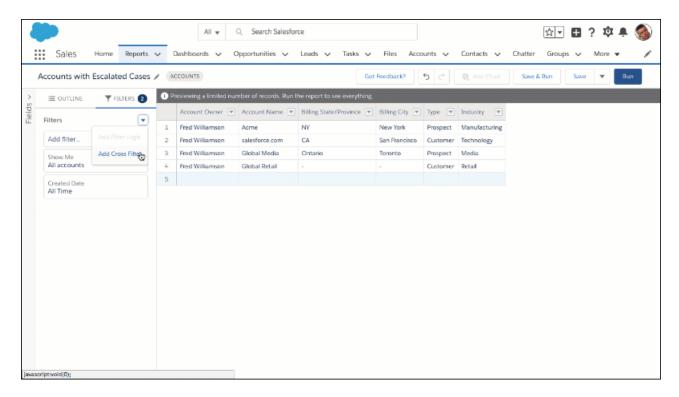
To add edit, or delete a cross filter in private and public reports:

Legacy Folder Sharing

Report Builder

### Enhanced Folder Sharing

Report Builder OR Report Builder (Lightning Experience)



Cross filters are available in both Lightning Experience and Salesforce Classic. Cross filters that you create in Lightning Experience work in Salesforce Classic, and vice versa.

The steps for creating a cross filter are a little different depending on whether you're using Lightning Experience or Salesforce Classic. Follow the instructions based on whether you're using the Lightning Experience or the Salesforce Classic report builder.

#### Create a Cross Filter in the Lightning Experience Report Builder

- 1. Edit or create a report.
- 2. From the FILTERS tab, click > Add Cross Filter.
- 3. Choose whether to show your primary object with or without a secondary object. Then, choose the secondary object.
- Click Apply.
- **5.** Optionally, to add a filter to the secondary object, click **Add** Secondary Object **Filter**, where Secondary Object is the name of the secondary object.
  - a. Choose a field from the secondary object.
  - **b.** Specify an operator and values for the secondary object filter.
  - c. Click Apply.
- 6. Click Save.

#### Create a Cross Filter in the Salesforce Classic Report Builder

- 1. Edit or create a report.
- 2. From the Filters pane, click **Add** > **Cross Filter**.
- 3. Select a parent object from the dropdown list. Your choice determines which related objects you see in the child object list.
  - Tip: In report types based on Campaigns, the parent object can be the secondary object in the report type. For example, in a "Campaigns with Leads" report, the parent object can be Campaigns or Leads.

- 4. Choose with or without.
- 5. Select a child object from the dropdown or search by its name. The dropdown list contains all eligible child objects of your selected parent object.
- **6.** Optionally, to add filters on the secondary object, add subfilters:
  - a. Click Add Secondary Object Filter, where Secondary Object is the name of the secondary object.
  - **b.** Select a field. The fields are determined by the child object in the cross filter. For example, if your cross filter is Accounts with Cases, you can use case fields for your subfilter.
  - **c.** Choose a filter operator.
  - **d.** Enter a value.
- 7. Click OK.
- 8. Click Save.

The report filters based on the primary-secondary object relationship and any additional filters on the secondary object.



Note: In Lightning Experience, although cross filters still filter the report, they do not appear in the Filters panel on the report run page. If you have permission to edit a report, you can view cross filters in the report builder.

#### SEE ALSO:

Example: Multiple Cross Filters and a Subfilter

Example: Use WITH in Cross Filters Example: Use WITHOUT in Cross Filters

#### Edit a Cross Filter

To change how a cross filter filters the primary or secondary object, edit it.

Cross filters are available in both Lightning Experience and Salesforce Classic. Cross filters that you create in Lightning Experience work in Salesforce Classic, and vice versa. You can edit cross filters in either builder.

The steps for editing a cross filter are a little different depending on whether you're using Lightning Experience or Salesforce Classic. Follow the instructions based on whether you're using the Lightning Experience or the Salesforce Classic report builder.

#### Edit a Cross Filter in the Lightning Experience Report Builder

- 1. Edit a report.
- 2. From the FILTERS tab, under Cross Filters, find the cross filter you want to edit.
- **3.** To edit the primary or secondary object, click the cross filter.
  - a. From the Show Me dropdown, change the primary object.
  - **b.** From the Operator dropdown, choose whether to show your primary object **with** or **without** a secondary object. Then, choose the secondary object.
  - **c.** From the Secondary Object dropdown, change the secondary object.
  - d. Click Apply.
- 4. To edit a subfilter on the secondary object, click the sub filter.
  - a. From the Edit Filter menu, change operator and values.
  - **b.** To change the field of the subfilter, remove the subfilter by clicking **X**. Then, add another subfilter based on the desired field.
  - c. Click Apply.
- 5. To save the report, click Save.

#### Edit a Cross Filter in the Salesforce Classic Report Builder

- 1. Edit a report.
- 2. From the Filters pane, click find the cross filter you want to edit. Click **Edit**.
  - a. Change primary object, operator, or secondary object.
  - **b.** Edit subfilters by changing field, operator, and value.
  - **c.** To delete a subfilter, click **Remove**.
  - **d.** To add another subfilter, click **Add** Secondary Object **Filter**, where Secondary Object is the name of the secondary object.
- 3. Click OK.
- **4.** To save the report, click **Save**.

The report filters based on the primary-secondary object relationship and any additional filters on the secondary object.

Note: In Lightning Experience, although cross filters still filter the report, they do not appear in the Filters panel on the report run page. If you have permission to edit a report, you can view cross filters in the report builder.

# **EDITIONS**

Available in: both Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To add edit, or delete a cross filter in private reports:

Legacy Folder Sharing
Create and
Customize Reports

## Enhanced Folder Sharing

Create and Customize Reports

To add edit, or delete a cross filter in private and public reports:

Legacy Folder Sharing

Report Builder

### Enhanced Folder Sharing

#### Delete a Cross Filter

When you no longer need a cross filter, or a subfilter in a cross filter, delete it.

Cross filters are available in both Lightning Experience and Salesforce Classic. Cross filters that you delete in Lightning Experience are also deleted in Salesforce Classic, and vice versa.

The steps for deleting a cross filter are a little different depending on whether you're using Lightning Experience or Salesforce Classic. Follow the instructions based on whether you're using the Lightning Experience or the Salesforce Classic report builder.

## Delete a Cross Filter in the Lightning Experience Report Builder

- 1. Edit a report.
- **2.** From the FILTERS tab, under Cross Filters, find the cross filter you want to delete. To delete the cross filter, and all its subfilters, click **X**.
- **3.** To delete a subfilter on the cross filter, but not the cross filter, find the subfilter you want to delete. From the subfilter, click **X**.
- **4.** To save the report, click **Save**.

#### Delete a Cross Filter in the Salesforce Classic Report Builder

- 1. Edit a report.
- **2.** From the Filters pane, find the cross filter you want to delete. To delete the cross filter, and all its subfilters, click **Remove**.
- 3. To delete a subfilter on the cross filter, but not the cross filter, click Edit.
  - a. Find the subfilter you want to delete, and click **Remove**.
  - b. Click OK.
- **4.** To save the report, click **Save**.

The report filters based on the primary-secondary object relationship and any additional filters on the secondary object.



**Note:** In Lightning Experience, although cross filters still filter the report, they do not appear in the Filters panel on the report run page. If you have permission to edit a report, you can view cross filters in the report builder.

## **EDITIONS**

Available in: both Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To add edit, or delete a cross filter in private reports:

Legacy Folder Sharing
Create and
Customize Reports

## Enhanced Folder Sharing

Create and Customize Reports

To add edit, or delete a cross filter in private and public reports:

Legacy Folder Sharing

Report Builder

## Enhanced Folder Sharing

#### **Example: Use WITH in Cross Filters**

Use cross filters to filter a report by an object's child objects using WITH conditions. For example, filter a report to show just accounts with cases.

Let's say a recent campaign in California won you a lot of new customers. You want to ensure that their customer cases get resolved quickly. You can create a report to see which of those accounts currently have cases.

#### Find Accounts with Cases in the Lightning Experience Report Builder

- 1. Edit or create a report based on the Accounts report type.
- Create a filter where Billing State/Province equals CA and click OK.
   Now your report shows all accounts in California. To see Californian accounts with cases, let's add a cross filter: Accounts with Cases.
- 3. Click ▼ > Add Cross Filter.
- **4.** From the Show Me dropdown, select **Accounts**.
- 5. From the Operator dropdown, select with.
- **6.** From the Secondary Object dropdown, select **Cases**.
- 7. Click Apply.
- 8. Click Save.

#### Find Accounts with Cases in the Salesforce Classic Report Builder

- 1. Edit or create a report based on the Accounts report type.
- Create a field filter where Billing State/Province equals CA and click OK.
   Now your report shows all accounts in California. To see Californian accounts with cases, let's add a cross filter: Accounts with Cases.
- **3.** From the Filters pane, click **Add** > **Cross Filter**.
- 4. From the Primary Object dropdown (left of the operator), choose Accounts.
- **5.** From the operator dropdown, choose **with**.
- **6.** From the Secondary Object dropdown (right of the operator), choose **Cases**.
- 7. Click OK.
- 8. Click Save.

When you run the report, the results include only California accounts with associated cases.

SEE ALSO:

Create a Cross Filter

# **EDITIONS**

Available in: both Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To add edit, or delete a cross filter in private reports:

Legacy Folder Sharing
Create and
Customize Reports

## Enhanced Folder Sharing

Create and Customize Reports

To add edit, or delete a cross filter in private and public reports:

Legacy Folder Sharing

Report Builder

## Enhanced Folder Sharing

#### **Example: Use WITHOUT in Cross Filters**

Use cross filters to filter a report by an object's child objects using WITHOUT conditions. For example, filter a report to show just contacts without activities.

Let's say that you've just imported a list of California accounts and you want to find which ones are missing contacts before you assign owners:

#### Find Accounts with Missing Contacts in the Lightning Experience Report Builder

- 1. Edit or create a report based on the Accounts report type.
- 2. Create a filter where Billing State/Province equals CA and click OK. Now your report shows all accounts in California. To see Californian accounts without contacts, let's add a cross filter: Accounts without Contacts.
- **3.** Click ▼ > Add Cross Filter.
- **4.** From the Show Me dropdown, select **Accounts**.
- **5.** From the Operator dropdown, select **without**.
- **6.** From the Secondary Object dropdown, select **Contacts**.
- 7. Click Apply.
- 8. Click Save.

#### Find Accounts with Missing Contacts in the Salesforce Classic Report Builder

- 1. Edit or create a report based on the Accounts report type.
- Create a field filter where Billing State/Province equals CA and click OK.
   Now your report shows all accounts in California. To see Californian accounts without contacts, let's add a cross filter: Accounts without Contacts.
- **3.** From the Filters pane, click **Add** > **Cross Filter**.
- 4. From the Primary Object dropdown (left of the operator), choose Accounts.
- 5. From the operator dropdown, choose without.
- **6.** From the Secondary Object dropdown (right of the operator), choose **Contacts**.
- 7. Click OK.
- 8. Click Save.

When you run the report, the results include only California accounts without an associated contact.

SEE ALSO:

Create a Cross Filter

# **EDITIONS**

Available in: both Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To add edit, or delete a cross filter in private reports:

Legacy Folder Sharing
Create and
Customize Reports

## Enhanced Folder Sharing

Create and Customize Reports

To add edit, or delete a cross filter in private and public reports:

Legacy Folder Sharing

Report Builder

### Enhanced Folder Sharing

## Example: Multiple Cross Filters and a Subfilter

Use cross filters to filter a report by an object's child objects using both WITH and WITHOUT conditions. For example, filter a report to show accounts that have cases but don't have activities.

Say you're a salesperson who wants to see which customer accounts have unresolved escalations because you want to ensure that your support team takes care of them.

# Find Accounts with Escalated Cases and without Activities in the Lightning Experience Report Builder

- 1. Edit or create a report based on the Accounts report type.
- 2. Click ▼ > Add Cross Filter.
- **3.** From the Show Me dropdown, select **Accounts**.
- 4. From the Operator dropdown, select with.
- **5.** From the Secondary Object dropdown, select **Cases**.
- 6. Click Apply.

The report now shows Accounts that have Cases.

- **7.** Refine the cross filter so that the report shows Accounts that have Escalated Cases:
  - a. Click Add Cases Filter.
  - b. Select Status.
  - c. Select Escalated.
  - d. Click Apply.

Now, add another cross filter so that the report shows only Accounts without Activities.

- 8. Click > Add Cross Filter.
- **9.** From the Show Me dropdown, select **Accounts**.
- **10.** From the Operator dropdown, select **without**.
- 11. From the Secondary Object dropdown, select Activities.
- **12.** Click **Apply**.
- 13. Click Save.

# Find Accounts with Escalated Cases and without Activities in the Salesforce Classic Report Builder

- 1. Edit or create a report based on the Accounts report type.
- 2. From the Filters pane, click Add > Cross Filter.
- 3. From the Primary Object dropdown (left of the operator), choose Accounts.
- **4.** From the operator dropdown, choose with.
- 5. From the Secondary Object dropdown (right of the operator), choose Cases.
- **6.** Refine the cross filter so that the report shows Accounts that have Escalated Cases:
  - a. Click Add Cases Filter.
  - **b.** From the Case Field dropdown, select **Status**.
  - c. From the Operator dropdown, select equals.

# **EDITIONS**

Available in: both Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To add edit, or delete a cross filter in private reports:

Legacy Folder Sharing
Create and
Customize Reports

## Enhanced Folder Sharing

Create and Customize Reports

To add edit, or delete a cross filter in private and public reports:

Legacy Folder Sharing

Report Builder

### Enhanced Folder Sharing

- **d.** From the picklist lookup, enter or select **Escalated**.
- 7. Click OK.

Now, add another cross filter so that the report shows only Accounts without Activities.

- **8.** From the Filters pane, click **Add** > **Cross Filter**.
- 9. From the Primary Object dropdown (left of the operator), choose **Accounts**.
- **10.** From the operator dropdown, choose **with**.
- **11.** From the Secondary Object dropdown (right of the operator), choose **Cases**.
- **12.** Click **Save**.

When you run the report, it will include only customer accounts with escalated cases and without activities.

SEE ALSO:

Create a Cross Filter

#### Cross Filter Considerations and Limits

As you create and work with cross filters, take note of these considerations and limits.

#### Considerations

- Adding cross filters can potentially slow down your report. To avoid having the report or
  preview time out, limit the data returned by setting filters. For example, select My
  opportunities for Show and Current FQ for Range instead of viewing all
  opportunities for all time.
- Since the objects available in cross filters depend on the parent object of the report type
  you choose, consider the related child objects before selecting a report type. For example,
  choose the Accounts report type to filter on Accounts with Partners because
  Partner is a child object of Account.
- Cross filters work in conjunction with your report type selection. Cross filters have an AND
  relationship with the report type you select. Choosing a report type of Accounts with Partners
  and adding a cross filter for Accounts without Partners will yield no results.
- In Lightning Experience, although cross filters still filter the report, they do not appear in the Filters panel on the report run page. If you have permission to edit a report, you can view cross filters in the report builder.

#### Limits

- Each report can have up to 3 cross filters.
- Each cross filter can have up to 5 subfilters.
- Filter logic doesn't apply to cross filters.

#### SEE ALSO:

Example: Multiple Cross Filters and a Subfilter

Create a Cross Filter

Example: Use WITH in Cross Filters

Example: Use WITHOUT in Cross Filters

# **EDITIONS**

Available in: both Salesforce Classic and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

#### **USER PERMISSIONS**

To add edit, or delete a cross filter in private reports:

Legacy Folder Sharing
Create and
Customize Reports

# Enhanced Folder Sharing

Create and
Customize Reports

To add edit, or delete a cross filter in private and public reports:

Legacy Folder Sharing

Report Builder

### Enhanced Folder Sharing

## Filter Reports Via URL Parameters in Lightning Experience

No need to futz with filters! Pass URL parameters to set filter values in Lightning Experience reports. When linking to reports or when bookmarking a report, add filter value parameters to the URL to customize how the report filters when opened. For example, bookmark your opportunities report and add a filter value parameter to specify whether you see New Business or Existing Business.

Watch a Demo: Dynamically Filter Reports Using URL Parameters (Lightning Experience)

- Append the parameter &fv0=Filter Value to the end of a report's URL.
   Let's take a closer look at what the parameter means.
  - & Denotes a new parameter in the URL. If no other parameters are present in the URL, then substitute? in place of &.
  - fv0 The fv stands for "filter value," and is the name of the parameter. The 0 is the numerical order in which the filter appears in the report. (The first filter is 0, the second filter is 1, the third is 2, and so forth.) Standard filters don't count in this order, and can't be filtered using URL parameters, although they appear as the first three filters on any report. To set the value of the fifth filter in the report, specify £v4. In our example, we're filtering the first field filter in the report.

The order in which filters appear in Lightning Experience on the report run page isn't necessarily the order that filters appear in the report. Locked filters are listed beneath unlocked filters on the run page, but aren't necessarily ordered after all the unlocked filters. To see the order of filters in your report, refer to their order in the report builder. Alternatively, make a GET call to /services/data/v39.0/analytics/reports/<rp>
TD>/describe and note their order in the JSON response.

• Filter Value — The criteria that the filter operates on.

The filter value must be URI encoded, which means certain characters (such as spaces) must be written in a format that URLs can understand. A space (' ') becomes %20 when URI encoded.

2. Navigate to the report's URL with the parameter appended.

When the report opens, it opens with filters applied as specified with parameters in the URL.

# **EDITIONS**

Available in: Lightning Experience

Available in: Essentials, Group, Professional, Enterprise, Performance, Unlimited, and Developer Editions

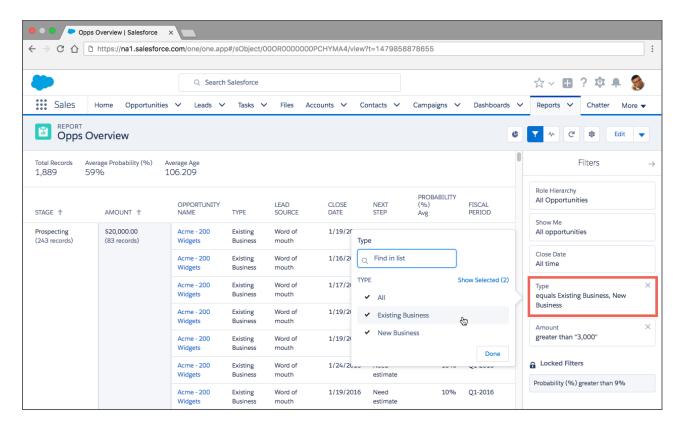
# USER PERMISSIONS

To filter a report in Lightning Experience:

Run Reports

**(3)** 

**Example**: Periodically throughout your day you check your opportunities report, and after opening it, you always edit a filter to show *New Business* or *Existing Business*. (The **Type** filter includes both *New Business* and *Existing Business* by default.)



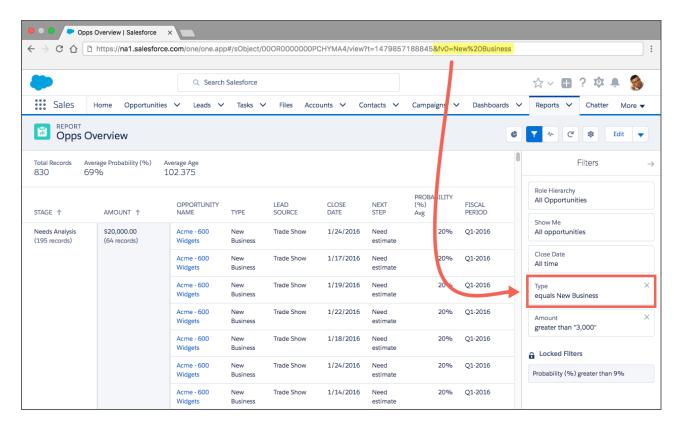
Instead of loading the report, editing the filter, and reloading the report, create a bookmark with a filter value parameter for New Business in the URL. Take note of the unfiltered opportunities report URL.

https://nal.salesforce.com/lighting/r/Report/000R000000PCHYMA4/view?t=1479844235107

Edit the URL to set the **Type** filter value to *New Business* by appending the parameter &fv0=New%20Business. Remember, the parameter value must be URI encoded, which means certain characters (such as spaces) must be written in a format that URLs can understand. In our example, the space ('') between "New" and "Business" becomes %20 when URI encoded. The full. bookmarked URL reads:

https://nal.salesforce.com/lighting/r/Report/000R0000000PCHYMA4/view?t=1479844235107&fv0=New%20Business

When you navigate to your opportunity report through the URL with a filter value parameter, the report opens filtered and ready to read.



Take note of these limitations to setting filter values via the URL.

- Only field filters support edits from URL parameters. Standard filters (role hierarchy filters, scope filters, date filters), cross filters, and row limit filters aren't supported. Standard, cross, and row limit filters don't count when listing filters £v0 is the first field filter.
- Chart filters aren't supported.
- Filter operators (like equals and greater than) can't be modified via URL parameters.
- You can't change the field being filtered via URL parameters.
- You can't add new filters to reports using filter value URL parameters. You can only modify existing filters.
- You can't delete filters from reports using filter value URL parameters. Setting a blank value filters by no text or numerals, but doesn't remove the filter.

# Filter Field History Reports by Old and New Values

# EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

Field history reports let you track changes in fields by adding an "Old Value" and a "New Value" column. With a field history report, each report row represents a change to a record. By filtering a field history report, you can answer questions like "Which opportunities have we closed so far this financial quarter?"

Before filtering on Old Value and New Value, ensure that field tracking is turned on for your Salesforce org. If you don't see any field history report types (such as Opportunity Field History), or if your field history report isn't returning any records even though you know that records have changed, then ask your admin to turn on field history tracking. For information about field tracking, including how to set it up, see Field History Tracking in Salesforce help.

All filters on the Old Value and New Value fields are text filters, which sometimes means that special consideration is needed. Even if New Value captures a change to, say, a numeric field - like Amount - it captures the number as text. That means that filter operators like "greater than" and "less than" won't work like you'd expect. If a field is represents a currency - like USD 1,000.50 - and you filter the report to show New Value equals USD 1,000.50, then the filter may not return any records for a colleague who works in a different locale. For example, for your colleague in Paris to get the same report results, the filter would probably need to read New Value equals USD 1 000,50 because numer formats vary widely by locale.

To see which opportunities closed this financial quarter, create an report based on the report type Opportunity Field History, then add these filters:

- Ensure that the Edit Date standard filter is set to Current FQ.
- New Value contains Closed
- Old Value does not contain Closed

# Filters Type Reference

Several different types of filters help you scope your report data: standard filters, field filters, cross filters, and row limit filters. Each filter type filters your report in different ways. This list of filter types helps you choose the right filter types for your report.

| Filter Type     | Description   |
|-----------------|---|
| Standard Filter | Standard filters are applied by default to most objects. Different objects have different standard filters, but most objects include the standard filters Show Me and Date Field. Show Me filters the object around common groupings (like "My accounts" or "All accounts"). Date Field filters by a field (such as Created Date or Last Activity) and a date range (such as "All Time" or "Last Month"). |
| Field Filter    | Field filters are available for reports, list views, workflow rules, and other areas of the application. For each filter, set the field, operator, and value. With tabular, summary, and matrix reports, you can drag a field from the Fields pane to the Filters pane to add a report filter.  |
| Filter Logic    | Add Boolean conditions to control how field filters are evaluated. You must add at least 1 field filter before applying filter logic.   |
| Cross Filter    | Filter a report by the child object using WITH or WITHOUT conditions.<br>Add subfilters to further filter by fields on the child object. For  |

## **USER PERMISSIONS**

To add or edit a filter:

Legacy Folder Sharing

Create and
Customize Reports

**AND** 

Report Builder

#### Enhanced Folder Sharing

Create and
Customize Reports

**AND** 

Report Builder

To lock or unlock filters so that users can't edit them while viewing a report in Lightning Experience:

#### Legacy Folder Sharing

Create and Customize Reports

AND

Report Builder

# Enhanced Folder Sharing

Create and Customize Reports

**AND** 

Report Builder

To edit a filter while viewing a report in Lightning Experience:

Run Reports

| Filter Type | Description   |
|-------------|---|
|             | example, if you have a cross filter of <i>Accounts with Opportunities</i> , click <b>Add Opportunity Filter</b> and create the <i>Opportunity Name equals ACME</i> subfilter to only include those opportunities.   |
| Row Limit   | For tabular reports, select the maximum number of rows to display, then choose a field to sort by and the sort order. You can use a tabular report as the source report for a dashboard table or chart component, if you limit the number of rows it returns. |

To add a report with a row limit filter, specify a "name" and "value" in Dashboard Settings in the Report Builder.

#### IN THIS SECTION:

# Example: Using Row Limits in Report Filters

Here is where you can see a sample of a report filter using a field filter, filter logic, and a row limit.

## **Example: Using Row Limits in Report Filters**

Here is where you can see a sample of a report filter using a field filter, filter logic, and a row limit. Say you are a sales executive who wants to see which California accounts currently have the most potential to generate revenue:

- 1. Click **New Report** from the Reports tab.
- 2. Open the Accounts & Contacts report type, choose Accounts, and click Create.
- **3.** To find California accounts that either have over \$10 million in revenue or are public companies, click **Add** > **Field Filter** and create these filters:
  - a. Billing State/Province equals CA
  - b. Annual Revenue greater than 10000000
  - **C.** Ownership equals Public
- **4.** To ensure that your results include all California accounts with \$10 million in revenue OR that are public, click **Add** > **Filter Logic** and enter 1 AND (2 OR 3).
- **5.** To limit the number of results for a tabular report to 10, click **Add** > **Row Limit** and enter 10. Choose your sort field and sort order. Click **OK**.

When you click **Run Report**, your results will contain ten rows and include public companies in California with revenues of more than \$10 million.

SEE ALSO:

Filters Type Reference Limit Report Results

#### Filter Operators Reference

The operator in a filter is like the verb in a sentence. Operators specify how filter criteria relate to one another. Refer to this list of filter operators when setting filters on list views, reports, dashboards, and some custom fields.

| Operator         | Uses   |
|------------------|--|
| equals           | Use for an exact match. For example, "Created equals today."   |
| less than        | Use for results that are less than the value you enter. For example, "Quota less than 20000" returns records where the quota field ranges from 0 to 19,999.99. |
| greater than     | Use when you want results that exceed the value you enter; for example, "Quota greater than 20000" returns records where the quota amount begins at 20,000.01. |
| less or equal    | Use for results that match or are less than the value you enter.   |
| greater or equal | Use for results that match or exceed the value you enter.  |

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Group, Essentials, Professional, Enterprise, Performance, Unlimited, and Developer Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

#### **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

AND

Report Builder

# Enhanced Folder Sharing

Create and Customize Reports

AND

Report Builder

| Operator         | Uses   |
|------------------|--|
| not equal to     | Shows results that don't have the value you enter. This operator is useful for eliminating empty fields. For example, "Email not equal to <blank>."</blank>  |
|                  | Note: If evaluating more than one value, none of the specified values can exist on the record. For example, if you specify not equal to A & C, only records where the value is neither A nor C are returned.   |
| contains         | Use for fields that include your search string, but sometimes also include other information. For example, "Account contains California" would find California Travel, California Pro Shop, and Surf California. Keep in mind that if you enter a short search string, it can match a longer word. For example, "Account contains pro" would find California Pro Shop and Promotions Corporation. This operator is not case-sensitive. |
| does not contain | Eliminates records that don't contain the value you enter. For example, "Mailing Address Line 2 does not contain P. O. Box."   |
|                  | Note: When specifying filter criteria on roll-up summary fields, does not contain uses "or" logic on comma-separated values. On list views, reports, and dashboards, does not contain uses "and" logic.  |
|                  | This operator is not case-sensitive.   |
| starts with      | Use when you know what your value starts with, but not the exact text. This operator is a narrower search term than "contains." For example, if you enter "Account starts with California," you find California Travel and California Pro Shop, but not Surf California.   |
| includes         | Available when you choose a multi-select picklist as the selected field. Use this operator to find records that include one or more of the values you enter.   |
|                  | For example, if you enter "Interests includes hockey, football, baseball," you find records that have only hockey selected, and records that have two or three of the values entered. Results do not include partial matches of values.  |
| excludes         | Available when you choose a multi-select picklist as the selected field. Use this operator to find records that do not contain any values that match the ones entered.   |
|                  | For example, if you enter "Interests exclude wine, golf," your report lists records that contain any other values from that picklist, including values that are blank. Results do not include partial matches of values.   |
|                  | Enter values on separate lines.  |
| between          | Available for dashboard filters only. Use to filter on ranges of values. For each range, the filter returns results that are greater than or equal to the minimum value and less than the maximum value.   |
|                  | For example, if you enter "Number of Employees from 100 through 500," your results include accounts with 100 employees up to those with 499 employees. Accounts with 500 employees aren't included in the results.   |
| within           | Available when you create list views based on a Geolocation custom field. Shows results that are within the specified radius from a fixed latitude and longitude. For example, if you enter "Warehouse location within 50 miles 37.775° –122.418°,", your list view includes all warehouses within a 50–mile radius of San Francisco, California.  |

## Relative Date Filter Reference

Relative date filters let you filter on date fields using easy-to-understand, human-speech-inspired syntax.

For example, instead of filtering on Close Date greater than Jan 1, 2017, filter using a relative date: Close Date equals this year.

For Enterprise, Unlimited, Performance, Professional, and Developer Editions, the week is defined by the Locale drop-down list on your personal information page. For Contact Manager, Group, and Personal Editions, the week is defined by the Locale setting in the company profile. For example, when the locale is US English, a week runs Sunday to Saturday, whereas with UK English, a week spans Monday to Sunday.



Note: Capitalization doesn't matter in relative date filter operators. THIS YEAR works, as do This Year and this year.

| Relative Date Value | Range   |
|---------------------|---|
| YESTERDAY           | Starts at 12:00:00 AM on the day before the current day and continues for 24 hours.   |
| TODAY               | Starts at 12:00:00 AM on the current day and continues for 24 hours.  |
| TOMORROW            | Starts at 12:00:00 AM. on the day after the current day and continues for 24 hours.   |
| LAST WEEK           | Starts at 12:00:00 AM on the first day of the week before the current week and continues for seven days.  |
| THIS WEEK           | Starts at 12:00:00 AM on the first day of the current week and continues for seven days.  |
| NEXT WEEK           | Starts at 12:00:00 AM on the first day of the week after the current week and continues for seven days.   |
| LAST n WEEKS        | Starts at 12:00:00 AM on the first day of the week that started <i>n</i> weeks before the current week, and continues up to 11:59 PM on the last day of the week before the current week.     |
| NEXT n WEEKS        | Starts at 12:00:00 AM on the first day of the week after the current week and continues for $n$ times seven days.   |
| n WEEKS AGO         | Starts at 12:00:00 AM on the first day of the week that started <i>n</i> weeks before the start of the current week and continues for seven days.   |
| LAST MONTH          | Starts at 12:00:00 AM on the first day of the month before the current month and continues for all the days of that month.  |
| THIS MONTH          | Starts at 12:00:00 AM on the first day of the current month and continues for all the days of that month.   |
| NEXT n MONTHS       | Starts at 12:00:00 AM on the first day of the month after the current month and continues until the end of the <i>n</i> th month.   |
| LAST n MONTHS       | Starts at 12:00:00 AM on the first day of the month that started <i>n</i> months before the current month and continues up to 11:59 PM on the last day of the month before the current month. |
| n MONTHS AGO        | Starts at 12:00:00 AM on the first day of the month that started <i>n</i> months before the start of the current month and continues for all the days of that month.                          |

| Relative Date Value | Range   |
|---------------------|---|
| NEXT MONTH          | Starts at 12:00:00 AM on the first day of the month after the current month and continues for all the days of that month.   |
| LAST 90 DAYS        | Starts at 12:00:00 AM 90 days before the current day and continues up to the current second. (The range includes today.)  |
| NEXT 90 DAYS        | Starts at 12:00:00 AM on the day after the current day and continues for 90 days. (The range does not include today.)   |
| LAST n DAYS         | Starts at 12:00:00 AM $n$ days before the current day and continues up to the current second. (The range includes today. Using this date value includes records from $n + 1$ days ago up to the current day.)           |
| NEXT n DAYS         | Starts at 12:00:00 AM on the next day and continues for the next $n$ days. (The range does not include today.)  |
| n DAYS AGO          | Starts at 12:00:00 AM on the day <i>n</i> days before the current day and continues for 24 hours. (The range does not include today.)   |
| LAST QUARTER        | Starts at 12:00:00 AM on the first day of the calendar quarter before the current calendar quarter and continues to the end of that quarter.  |
| THIS QUARTER        | Starts at 12:00:00 AM on the first day of the current calendar quarter and continues to the end of the quarter.   |
| NEXT QUARTER        | Starts at 12:00:00 AM on the first day of the calendar quarter after the current calendar quarter and continues to the end of that quarter.   |
| LAST n QUARTERS     | Starts at 12:00:00 AM on the first day of the calendar quarter $n$ quarters ago and continues to the end of the calendar quarter before the current quarter. (The range does not include the current quarter.)          |
| NEXT n QUARTERS     | Starts at 12:00:00 AM on the first day of the calendar quarter after the current quarter and continues to the end of the calendar quarter $n$ quarters in the future. (The range does not include the current quarter.) |
| n QUARTERS AGO      | Starts at 12:00:00 AM on the first day of the calendar quarter $n$ quarters before the current calendar quarter and continues to the end of that quarter.   |
| LAST YEAR           | Starts at 12:00:00 AM on January 1 of the year before the current year and continues through the end of December 31 of that year.   |
| THIS YEAR           | Starts at 12:00:00 AM on January 1 of the current year and continues through the end of December 31 of the current year.  |
| NEXT YEAR           | Starts at 12:00:00 AM on January 1 of the year after the current year and continues through the end of December 31 of that year.  |
| n YEARS AGO         | Starts at 12:00:00 AM on January 1 of the calendar year <i>n</i> years before the current calendar year and continues through the end of December 31 of that year.  |
| LAST n YEARS        | Starts at 12:00:00 am on January 1, $n+1$ years ago. The range ends on December 31 of the year before the current year.   |

| Relative Date Value    | Range  |
|------------------------|--|
| NEXT n YEARS           | Starts at 12:00:00 AM on January 1 of the year after the current year and continues through the end of December 31 of the $n$ th year.   |
| LAST FISCAL QUARTER    | Starts at 12:00:00 AM on the first day of the fiscal quarter before the current fiscal quarter and continues through the last day of that fiscal quarter. The fiscal quarter is defined on the Fiscal Year page in Setup.  |
|                        | Note: None of the FISCAL literal date values are supported when creating mobile custom views.  |
| THIS FISCAL QUARTER    | Starts at 12:00:00 AM on the first day of the current fiscal quarter and continues through the end of the last day of the current fiscal quarter. The fiscal quarter is defined on the Fiscal Year page in Setup.  |
| NEXT FISCAL QUARTER    | Starts at 12:00:00 AM on the first day of the fiscal quarter after the current fiscal quarter and continues through the last day of that fiscal quarter. (The range does not include the current quarter.) The fiscal quarter is defined on the Fiscal Year page in Setup.                                 |
| LAST n FISCAL QUARTERS | Starts at 12:00:00 AM on the first day of the fiscal quarter $n$ fiscal quarters ago and continues through the end of the last day of the previous fiscal quarter. (The range does not include the current fiscal quarter.) The fiscal quarter is defined on the Fiscal Year page in Setup.                |
| NEXT n FISCAL QUARTERS | Starts at 12:00:00 AM on the first day of the fiscal quarter after the current fiscal quarter and continues through the end of the last day of the nth fiscal quarter. (The range does not include the current fiscal quarter.) The fiscal quarter is defined on the Fiscal Year page in Setup.            |
| n FISCAL QUARTERS AGO  | Starts at 12:00:00 AM on the first day of the fiscal quarter $n$ fiscal quarters before the current fiscal quarter and continues through the end of the last day of that fiscal quarter.   |
| LAST FISCAL YEAR       | Starts at 12:00:00 AM on the first day of the fiscal year before the current fiscal year and continues through the end of the last day of that fiscal year. The fiscal quarter is defined on the Fiscal Year page in Setup.  |
| THIS FISCAL YEAR       | Starts at 12:00:00 AM on the first day of the current fiscal year and continues through the end of the last day of the fiscal year. The fiscal quarter is defined on the Fiscal Year page in Setup.  |
| NEXT FISCAL YEAR       | Starts at 12:00:00 AM on the first day of the fiscal year after the current fiscal year and continues through the end of the last day of that fiscal year. The fiscal quarter is defined on the Fiscal Year page in Setup.   |
| LAST n FISCAL YEARS    | Starts at 12:00:00 AM on the first day of the fiscal year <i>n</i> fiscal years ago and continues through the end of the last day of the fiscal year before the current fiscal year. (The range does not include the current fiscal year.) The fiscal quarter is defined on the Fiscal Year page in Setup. |
| NEXT n FISCAL YEARS    | Starts at 12:00:00 AM on the first day of the fiscal year after the current fiscal year and continues through the end of the last day of the $n$ th fiscal year. (The range  |

| Relative Date Value | Range   |
|---------------------|---|
|                     | does not include the current fiscal year.) The fiscal quarter is defined on the Fiscal Year page in Setup.  |
| n FISCAL YEARS AGO  | Starts at 12:00:00 AM on the first day of the fiscal year $n$ fiscal years ago and continues through the end of the last day of that fiscal year. |

## Notes about Filtering on Types of Fields and Values

Keep these tips in mind when filtering on text fields, date fields, numeric values, picklist values, and blank or null values.

#### Filtering on Text Fields

- Separate search terms by commas to filter by more than one value. For example, to search for accounts in California, New York, or Washington, use *State contains CA,NY,WA*.
- Filtering isn't case sensitive. For example, searching *State contains ID* returns all matches for "ID", but also returns any instances of "Florida" and "Idaho" because they contain "id" in their names.
- When you filter on standard long text area fields, such as Description or Solution Details, only the first 1000 characters of the field
  are searched for matches in reports. Reports can't be filtered on custom long text area fields. Only the first 255 characters are shown
  for custom long text area fields in list views.

#### Filtering on Date Fields

- If entering a date, use the format allowed by your Locale setting. You can also use special date values like TODAY, NEXT WEEK, NEXT YEAR, LAST < number > DAYS, and so on.
- The standard Birthdate field allows you to filter the birthdate based only on the month and day, ignoring the year. The year is always included when you filter on any custom date fields.

#### Filtering on Numeric Values

- Place quotation marks around numbers or other data that includes commas. For example Amount equals "10,000" returns records that have an amount of \$10,000 but Amount equals 10,000 returns \$10,000 as well as \$10 and \$0.
- To search for phone numbers, include the exact phone number formatting or example, *Phone starts with (561)*.

#### Filtering on Picklist Values

- When filtering on multi-select picklist fields, use a semicolon between values to specify an exact match.

  For example, selecting the "equals" operator and a semicolon between two values includes records with both values specified, excluding all other values.
- If your organization uses record types, the lookup dialog lists picklist values for all record types. Use the "equals" or "not equal to" operators for these filters.
  - Note: If you change the label for a picklist value that's used as a filter criterion, the picklist value is automatically removed from the filter criteria. For example, if your report contains a filter where Lead Source equals Email or Web and you change the picklist value Web to Referral, your report filter changes to Lead Source equals Email. If the changed picklist value was the only value specified for a particular filter, it continues to show up in your filters, but an error appears.

#### Filtering on Blank or Null Values

When you use the "less than," "greater than," "less or equal," or "greater or equal" operators on fields that have numeric values, records with blank or "null" values are returned as if their value is zero (0). For example, if you create a workflow rule or a lead assignment rule for accounts with the criteria Annual Revenue less than 100000, account records match if their Annual Revenue is blank.

However, records with blank field values are not considered matches in report filters, custom list views, and account assignment rules (which assign accounts to territories).

• To limit results to records that are blank or contain "null" values for a particular field, choose the field and the "equals" or "not equal to" operators, leaving the third field blank. For example, Amount equals returns records with blank amount fields. You can search for blank values or other specified values at the same time. For example, Amount equals 1,,2 returns records where the Amount is blank or contains the value "1" or "2".

SEE ALSO:

Relative Date Filter Reference

## Tips for Filtering on Multiple Currencies

Tips for filtering on currency fields when your organization uses multiple currencies.

If your organization uses multiple currencies, follow these tips to create more effective filters:

- Use the Currency field to find items with a particular currency. For example, *Opportunity Currency equals AUD* finds opportunities with amounts in Australian dollars.
- Prefix currency amounts with a currency code, such as *Annual Revenue greater* than USD 50000000.

Without the currency code, all amounts are assumed to be in the user's currency. For example, if the user's currency is U.S. dollars, *Annual Revenue greater than 50000000* means 50 million U.S. dollars.

If the user's currency is invalid, the corporate currency is used.

From Setup, enter *Manage Currencies* in the Quick Find box, then select **Manage Currencies** to obtain the currency codes.

- All amounts are converted to the corporate currency for comparison. For example, *Annual Revenue greater than USD 5000000* finds accounts with revenue greater than 50 million U.S. dollars. This would include an account with revenue of 114 million Australian dollars, which is the equivalent of 60 million U.S. dollars, assuming a conversion rate of 1.9.
- Amounts in reports are shown in their original currencies, and report totals are displayed in your personal currency. You can change the currency used for report totals by clicking **Show** > **Currencies**. For any amount, you can also choose to display the "converted" column (for example, "Annual Revenue (converted)"), which will show amounts in the currency you select from the Display Currencies Using drop-down list.

SEE ALSO:

Notes about Filtering on Types of Fields and Values

# **EDITIONS**

Available in: both Salesforce Classic and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

# Schedule and Subscribe to Reports

Schedule and Subscribe to Reports and receive notifications that keep you informed about metrics you care most about without having to manually run reports. In Salesforce Classic, you can specify criteria that trigger report notifications.

Note: Users with Salesforce Platform User Licenses can't schedule or subscribe to reports.

Watch a video:

Subscribe to Reports and Dashboards (Lightning Experience)

Report Notifications (Salesforce Classic)

Tips for Scheduling Reports (Salesforce Classic)

## **EDITIONS**

Available in: both Salesforce Classic and Lightning Experience

Available in: Essentials, Group, Professional, Enterprise, Performance, Unlimited, and Developer Editions

#### IN THIS SECTION:

1. Subscribe to Get Refreshed Report Results in Lightning Experience

Subscribe yourself and other people to up to 5 reports to receive refreshed report results by email on a schedule that you set: daily, weekly, or monthly.

2. Subscribe to Get Report Notifications in Salesforce Classic

In Salesforce Classic, subscribe to a report to receive report notifications periodically when the metrics you care about most meet certain conditions. Set the conditions that trigger notification, and specify if you want to be notified via Salesforce app notifications, Chatter, or email.

3. Schedule Reports in Salesforce Classic

You can set up a report to run itself daily, weekly, or monthly and send the results automatically to the people who need to see them, so that you don't have to remember to log in and do it yourself.

## Subscribe to Get Refreshed Report Results in Lightning Experience

Subscribe yourself and other people to up to 5 reports to receive refreshed report results by email on a schedule that you set: daily, weekly, or monthly.

Watch a video: Subscribe to Reports and Dashboards (Lightning Experience)

For example, every Monday morning you arrive at your desk and run your case overview report to determine case priority. Instead of manually running the report, subscribe to it and have it emailed to you every Monday morning at 8:00am.

- From the Reports tab, or from the report run page, click > Subscribe.
   If you've already subscribed to a report, but want to change the schedule, then click Subscribe on the report again.
- From the Edit Subscription modal, set the subscription schedule.To review the cases your team closes each day, receive a case report daily at 5:00 PM.
- **3.** Under Send To, subscribe people to the report.
  - **Me** Only you receive the report.
  - **Select People** People you specify receive the report. You are included by default, but you can remove yourself once you add at least one other person.

When the subscription emails the refreshed report to each recipient, it sends to the email address set in **Settings** > **Email** > **My Email Settings**. If no email is set in My Email Settings, then the refreshed report is sent to the recipient's email address set on their Salesforce User record.

(1) Important: Recipients see emailed report data as the person running the report.

Consider that they may see more or less data than they normally see in Salesforce.

# EDITIONS

Available in: Lightning Experience

Available in: Essentials, Group, Professional, Enterprise, Performance, Unlimited, and Developer Editions

## **USER PERMISSIONS**

To subscribe to reports:

Subscribe to Reports

To subscribe other people to reports:

Subscribe to Reports:
 Add Recipients

To specify who runs the report in a report subscription:

 Subscribe to Reports: Set Running User

- 4. Under Run Report As, specify who runs the report.
  - **Me** You run the report, and recipients see report data in the emailed report as you.
  - Another Person Specify someone who has permission to run reports and who has access to the report.

## 5. Click Save.

Your report subscription starts, and recipients begin receiving report results by email according to the schedule you set.



- Subscription recipients aren't listed on the report subscription emails.
- Users with Salesforce Platform User Licenses can't subscribe to reports.

To unsubscribe, open the Edit Subscription window by clicking **Subscribe** again. Then, click **Unsubscribe**.

## Subscribe to Get Report Notifications in Salesforce Classic

In Salesforce Classic, subscribe to a report to receive report notifications periodically when the metrics you care about most meet certain conditions. Set the conditions that trigger notification, and specify if you want to be notified via Salesforce app notifications, Chatter, or email.

**Ø** 

Note: Users with Salesforce Platform User Licenses can't subscribe to reports.

For example, you could subscribe to an open-issue report and get notified every morning if there are over 20 open issues. You can subscribe to notifications for up to five reports.

Watch a demo: Report Notifications (Salesforce Classic)

Ø

**Note:** Report Notifications doesn't appear as an available option for unsaved reports. Save the report before subscribing to it.

Personal Report Notifications aren't related to the Schedule Future Runs feature, which enables you to email reports at specified times without specifying conditions. To schedule emailed reports, select **Schedule Future Runs** from the Run Report drop-down menu.

- 1. On the Report Run page, click **Subscribe**.
- **2.** On the Report Subscription page, choose whether to be notified each time conditions are met or only the first time.
- **3.** Specify each condition in three parts: aggregate, operator, value. For example, trigger notifications whenever the sum of amount is less than \$1 million.
  - Aggregate is the metric that's the basis of your condition. It can be Record Count, Average Amount, Smallest Amount, Largest Amount, or Sum of Amount.
  - Operator is the basis of comparison, such as Equal, Not Equal, Greater Than, and so on.
  - Value is the number that you want the aggregate compared to.

Your conditions are evaluated when the report is run, and notifications are sent if all conditions are met (up to five conditions per report).

**4.** Schedule how often (every weekday, daily, or weekly) and when to evaluate for your conditions. For example, run the report every weekday at 7 a.m.

- **5.** Select one or more notification types.
  - Send a Salesforce in-app notification
  - Post to Chatter
  - Send an email notification
  - Execute a custom Apex action, such as creating tasks or escalating cases
     For more information about developing a custom Apex class, see the Apex Developer Guide.
- **6.** Make sure that the subscription is active if you're ready to start receiving notifications.
- **7.** Click **Save** to schedule the notifications.

# **EDITIONS**

Available in: Salesforce Classic

Available in: Essentials, Group, Professional, Enterprise, Performance, Unlimited, and Developer Editions

## **USER PERMISSIONS**

To subscribe to reports in Salesforce Classic:

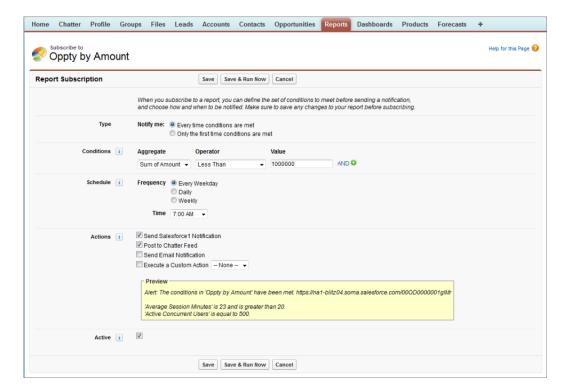
Run Reports

To enable or disable Salesforce Classic report notification subscriptions:

Customize Application

**(3)** 

**Example**: A report is scheduled to be run every weekday at 7 a.m. If the sum of the amount is less than 1,000,000, a Salesforce app notification is sent and a Chatter post is made.



#### SEE ALSO:

Schedule Reports in Salesforce Classic Salesforce App Notifications

## Schedule Reports in Salesforce Classic

You can set up a report to run itself daily, weekly, or monthly and send the results automatically to the people who need to see them, so that you don't have to remember to log in and do it yourself.

Note: Users with Salesforce Platform User Licenses can't schedule reports.

Tips for Scheduling Reports (Salesforce Classic)

#### IN THIS SECTION:

#### 1. Schedule a Report for Refresh

Schedule a report to run daily, weekly, or monthly. An HTML version of the report can be sent by email to users in your organization.

#### 2. View a Report's Schedule

View a report's schedule on the Schedule Report page or from the Reports tab. View all report schedules for the organization under Setup.

#### 3. Manage a Report's Schedule

Create, change, view or delete a scheduled report from the Schedule Report page.

#### 4. Change a Report's Schedule

You can make changes to an already scheduled report on the Schedule Report page.

#### 5. Delete a Report's Schedule

Select a scheduled report and unschedule it to delete its scheduled run.

#### 6. Tips on Scheduling Reports

Some tips to keep in mind about timings, limits, and email notifications when scheduling a report.

#### SEE ALSO:

Schedule a Report for Refresh

Change a Report's Schedule

Delete a Report's Schedule

Manage a Report's Schedule

Tips on Scheduling Reports

View a Report's Schedule

Subscribe to Get Report Notifications in Salesforce Classic

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

#### **USER PERMISSIONS**

To create, edit, and delete reports:

**Legacy Folder Sharing**Schedule Reports

Enhanced Folder Sharing

#### Schedule a Report for Refresh

Schedule a report to run daily, weekly, or monthly. An HTML version of the report can be sent by email to users in your organization.

Watch a Demo: Tips for Scheduling Reports (Salesforce Classic)

- 1. On the Reports tab, click a report name.
- 2. Click **Schedule Future Runs** from the **Run Report** drop-down menu.

If you're creating a new report, you are asked to save the report in a folder before scheduling. If the report folder is shared with a group, you can schedule the report only for the entire group. To schedule the report for an individual group member, share the report folder with that member.

**3.** On the Schedule Report page, specify a running user who has access to the folder where the report is stored.

The access level of the running user determines what other users, including portal users, see when they receive the scheduled report run results. This means that not all users can see every field, and the running user can see fields that others may not be able to see. When it's sent, the report indicates which fields the running user can see that can't be viewed by others. You need the "View All Data" permission to specify a running user other than yourself.

Note: If the running user becomes inactive, the report doesn't run. Salesforce sends an email notification to either activate the user, delete the report schedule, or change the running user to an active one. Salesforce sends the notification to users with the "Manage Users," "Modify All Data," and "Manage Billing" permissions. If no user has all these user permissions, Salesforce sends the notification to users with the "Manage Users" and "Modify All Data" user permissions.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To create, edit, and delete reports:

**Legacy Folder Sharing**Schedule Reports

Enhanced Folder Sharing

Schedule Reports

**4.** Select an email setting.

| Select              | То  |
|---------------------|---|
| To me               | Send the report to your email address specified on your user profile. |
| To me and/or others | Email the report to additional users.                                 |

You can send reports only to email addresses included on Salesforce user records. When portal users receive emailed reports, they see the same data as the running user set in the report schedule. If you have information you'd rather not share, schedule the report to run with a portal user as the running user.

- Note: Portal users receive report and dashboard refresh email notifications when the Allow Reports and Dashboards to Be Sent to Portal Users option is enabled.
- **5.** Set the frequency, duration, and time for running the report:
  - In the Frequency field, select Daily, Weekly, or Monthly and then refine the frequency criteria.
  - Using the Start and End fields, specify the dates during which you want to schedule the report. To enter the current date, click the link showing the date.
  - Next to Preferred Start Time, click Find available options to choose a start time.

Your preferred start time might not be available if other users have already selected that time to schedule a report.

**6.** Click **Save Report Schedule**. You can choose:

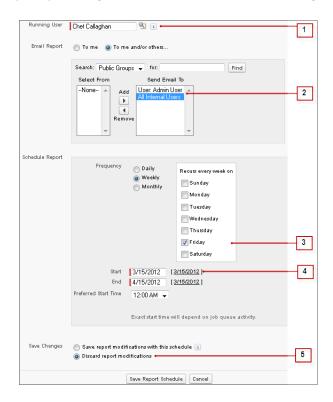
| Choose                                       | То  |
|--|---|
| Save report modifications with this schedule | Save both the report schedule and changes you made to the report.     |
| Discard report modifications                 | Save the schedule only. Changes you made to the report are discarded. |

Report recipients can click the report name in emailed reports to log in to Salesforce and view the report directly.



#### Example: Example

A report is scheduled to run every Friday at midnight, and its results are emailed to a selected group and user.



- 1. All users, including portal users, viewing the scheduled report see the report data that Sales Director Chet's access level allows.
- 2. Report run results are set to be emailed to a public user group called All Internal Users and the admin user. You can only send emails to users and groups with access to the report folders. The Search drop-down displays all available categories based on your search criteria in the Running User field.
- **3.** The report is scheduled to run every Friday.
- **4.** The report run is scheduled to start on the current date.
- **5.** The schedule is saved without saving prior changes made to the report.

#### SEE ALSO:

Manage a Report's Schedule

#### View a Report's Schedule

View a report's schedule on the Schedule Report page or from the Reports tab. View all report schedules for the organization under Setup.

- Tips for Scheduling Reports (Salesforce Classic)
- To see the schedule for a report on the Reports tab, hover over in the schedule oclumn.

  This shows the frequency and the date of the next run.

Users without the "Schedule Reports" permission can't see the icon and information.

- To see a report's run schedule on the Schedule Report page:
  - 1. Click a scheduled report name on the Reports tab.
  - 2. Click Schedule Future Runs from the Run Report drop-down menu..
- To see all scheduled reports for your organization, from Setup, enter *Scheduled Jobs* in the Quick Find box, then select **Scheduled Jobs**.

Only users with the "View Setup and Configuration" permission can view this information.

#### SEE ALSO:

Manage a Report's Schedule

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing
Schedule Reports

Enhanced Folder Sharing

#### Manage a Report's Schedule

Create, change, view or delete a scheduled report from the Schedule Report page.

Tips for Scheduling Reports (Salesforce Classic)

On the Schedule Report page you can:

- Schedule a new or existing report to run in the future and have its results emailed to others.
- Change the schedule on a previously scheduled report.
- View scheduled jobs for all reports in your organization or view the schedule for just a selected report.
- Delete a scheduled run for a selected report.

Additional scheduled reports may be available for purchase.

#### SEE ALSO:

Schedule a Report for Refresh

# EDITIONS

Available in: Salesforce Classic (not available in all orgs)

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing
Schedule Reports

Enhanced Folder Sharing

#### Change a Report's Schedule

You can make changes to an already scheduled report on the Schedule Report page.

- Tips for Scheduling Reports (Salesforce Classic)
- 1. On the Reports tab, click the name of the scheduled report.
- 2. Click **Schedule Future Runs** from the **Run Report** drop-down menu.
- **3.** Make the required changes on the Schedule Report page.
- 4. Click Save Report Schedule.

SEE ALSO:

Manage a Report's Schedule

# EDITIONS

Available in: Salesforce Classic (not available in all orgs)

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing
Schedule Reports

Enhanced Folder Sharing

#### Delete a Report's Schedule

Select a scheduled report and unschedule it to delete its scheduled run.

- Tips for Scheduling Reports (Salesforce Classic)
- 1. On the Reports tab, click the name of the scheduled report.
- 2. Click Schedule Future Runs from the Run Report drop-down menu.
- 3. Click Unschedule Report.

The run schedule for the report is canceled and not sent to the Recycle Bin.

SEE ALSO:

Manage a Report's Schedule

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To schedule reports:

Legacy Folder Sharing
Schedule Reports

**Enhanced Folder Sharing**Schedule Reports

## Tips on Scheduling Reports

Some tips to keep in mind about timings, limits, and email notifications when scheduling a report.

Scheduling Report Runs

- On the Reports tab, hover over in the schedule column () to view a report's schedule. Note that users without the "Schedule Reports" permission can't see this icon and information.
- You can't create schedules for joined reports.
- Your organization is limited to no more than 200 scheduled reports. Daily limits differ by edition.
   Additional scheduled reports may be available for purchase.
- Scheduled reports run in the time zone of the user who set up the schedule. For example, if
  the Time Zone field on your user record is set to Pacific Standard Time, and you schedule
  a report to run every day at 2:00 PM, then the report runs every day between 2:00 PM and 2:29
  PM Pacific Standard Time.
- If you view and save a schedule in a time zone different from the one in which it was previously scheduled, the time slot could potentially change.
- If you schedule a report to run on a specific day of every month, the report runs only on months that have that specific day. For example, if you schedule a report to run on the 31st day of every month, then the report runs only on months that have 31 days. To schedule a report on the last day of every month, choose last from the On day of every month drop-down list.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

• The report runs within 30 minutes of the time you select for Preferred Start Time. For example, if you select 2:00 PM as your preferred start time, the report runs any time between 2:00 PM and 2:29 PM, depending on how many other reports are scheduled at that time.

• Scheduling reports is not tracked in the audit trail history.

#### **Emailing Scheduled Reports**

• You can't email scheduled reports to Chatter Free users.



- Emailed reports don't include report charts. To email a chart of the report, create a dashboard and schedule a dashboard refresh.
- Reports display only the first 2,000 records (same as in a browser).
- Outlook 2007 limitation: Report emails containing tables more than 22 inches wide or with more than 63 columns might not display properly.
- The maximum size for emailed reports is 10 MB. Try the following techniques to reduce the amount of data in your report:
  - Filter for your own records, rather than all records.
  - Limit the scope of the data to a specific date range.
  - Exclude unnecessary columns from your report.
  - Hide the report details.

#### SEE ALSO:

Schedule a Dashboard Refresh in Salesforce Classic Manage a Report's Schedule

# **Export and Connect Reports to Other Tools**

Export or connect a report to another tool, such as Quip, to work with report data outside of Salesforce.

#### IN THIS SECTION:

#### Export a Report

To work with report data in a dedicated tool, such as a spreadsheet, export report data as a Microsoft Excel \* (.xls) or comma-separated values (.csv) file.

#### Open a Report in Quip

Take full advantage of Quip's living documents by working with connected report data in a Quip spreadsheet. @Mention colleagues to discuss data through real-time discussion threads. Harness hundreds of spreadsheet functions. And add spreadsheets into other Quip docs.

#### Report on Salesforce Data with Excel

Connect for Office includes an Excel add-in that enables you to securely access your Salesforce reports with Microsoft® Excel®. You create the reports you need in Salesforce, then pull them into an Excel worksheet, and use Excel's formulas, charts, and pivot tables to customize and analyze your data. When Salesforce disables TLS 1.0, we're ending support for Connect for Office.

## Export a Report

To work with report data in a dedicated tool, such as a spreadsheet, export report data as a Microsoft Excel \* (.xls) or comma-separated values (.csv) file.

You can export an unlimited number of report rows and columns. Most spreadsheet tools have a per-file row and column limit. Common tool-imposed limits are 1,048,576 rows by 16,384 columns, or 65,536 rows by 256 columns.

When exporting reports in the comma-separated values (.csv) format, the locale settings on your user detail page determine the field separator (delimiter) included in the exported file. For example, if your locale setting is English (United States), then the decimal separator is a period ("."), If your locale setting is French (France), then the decimal separator is a comma (","). You can override the default separator for your locale by choosing Comma Delimited (non-locale) .csv from the Format dropdown list.

Excel does not display the field separator in .csv format. If you want to work with .csv files in Excel, we recommend that your locale setting in Salesforce match your Regional Options setting in Windows.

- 1. In Salesforce Classic, from Reports, next to the report you want to export, click > Export. In Lightning Experience, click Export from the Edit dropdown menu.
  - If you set the "Do not save encrypted pages to disk" option in Internet Explorer, you can't
    open your report online in Excel. Instead, save the exported report to your computer, and
    then open it in Excel. To change this setting in Internet Explorer, deselect "Do not save
    encrypted pages to disk" under Internet options.
  - Reports in the joined format can't be exported, but you can choose a printable view.
- 2. Set an Encoding appropriate for your language.
- 3. Set the Format to Excel Format .xls or Comma Delimited .csv.
- 4. Click Export.
- **5.** If prompted by a browser dialog, choose to save the file.

Your exported report downloads.

Note: In Lightning Experience, you can export your report with the formatting, column summaries and totals intact in the Excel format (.xlsx) by selecting **Formatted Report** from the Export dialog. For a version of your report with just the records, select **Details Only** from the Export dialog and set the encoding and format options.

#### SEE ALSO:

Run Reports in the Background Print a Report

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Essentials, Group, Professional, Enterprise, Performance, Unlimited, and Developer Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

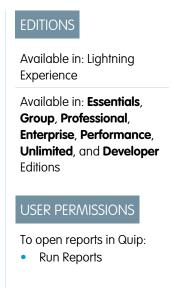
To export reports:

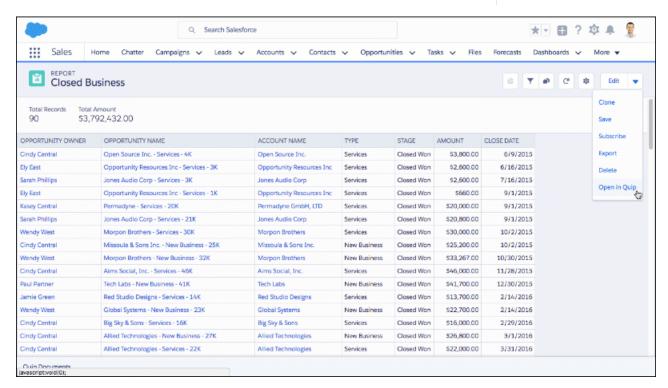
Legacy Folder Sharing
Export Reports

Enhanced Folder Sharing Export Reports

## Open a Report in Quip

Take full advantage of Quip's living documents by working with connected report data in a Quip spreadsheet. @Mention colleagues to discuss data through real-time discussion threads. Harness hundreds of spreadsheet functions. And add spreadsheets into other Quip docs.





Opening a report in Quip connects the report with a Quip spreadsheet. Once connected, the spreadsheet automatically gets refreshed report data from Salesforce, and the spreadsheet links back to records in Salesforce. For example, the Account Name column links back to Account records.

- 1. Run the report you want to open in Quip.
- 2. Click **> Open in Quip**.
- **3.** If prompted, sign in to Quip.

Your report opens in Quip.

Manage connected report data in the Quip spreadsheet by clicking **Live Data** and hovering over the name of the connected Salesforce report. From the Live Data menu, you can:

- Open the report in Salesforce.
- Manually refresh the report to get the latest data in Quip.
- Turn automatic report refreshes on or off. When automatic refresh is on, then Quip gets the latest refreshed report data from Salesforce whenever you open the spreadsheet.
- Delete the connection between the Salesforce report and the Quip spreadsheet. Deleting the connection doesn't delete the Salesforce report nor the Quip spreadsheet.

# Report on Salesforce Data with Excel

Connect for Office includes an Excel add-in that enables you to securely access your Salesforce reports with Microsoft® Excel®. You create the reports you need in Salesforce, then pull them into an Excel worksheet, and use Excel's formulas, charts, and pivot tables to customize and analyze your data. When Salesforce disables TLS 1.0, we're ending support for Connect for Office.

(1) Important: When Salesforce disables TLS 1.0, we're ending support for Connect for Office. This change means that there's no guarantee that Connect for Office can establish a connection between Salesforce and Microsoft® Word or Excel. Even if sales reps can establish a connection, Salesforce no longer provides support or maintenance when there's an issue.

The Excel add-in provides the same access to reports and fields that you normally experience in Salesforce. You can distribute your customized Excel worksheets via the Documents tab, allowing all users to track customized analytics in real time. You can reference data from multiple reports in one worksheet to create a single-page overview of key metrics.

Communication between Excel and Salesforce uses the same secure HTTPS protocol as when you log in via your Web browser.

# IN THIS SECTION:

1. Install Connect for Office

When Salesforce disables TLS 1.0, we're ending support for Connect for Office.

2. Log Into Connect for Office

You need to log in to Salesforce before you can request data from your Salesforce reports. When Salesforce disables TLS 1.0, we're ending support for Connect for Office.

3. Import Reports Into Excel with Connect for Office

Import your custom or standard Salesforce reports into Excel so you can further analyze the data using Excel's formulas, charts, and pivot tables. When Salesforce disables TLS 1.0, we're ending support for Connect for Office.

4. Refresh and Update Data with Connect for Office

Keep your Salesforce reports up to date in Excel by periodically refreshing the report data and any pivot tables you have created. When Salesforce disables TLS 1.0, we're ending support for Connect for Office.

#### Install Connect for Office

When Salesforce disables TLS 1.0, we're ending support for Connect for Office.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: All Editions

# **USER PERMISSIONS**

To access Salesforce reports from Excel:

Run Reports

AND

**Export Reports** 

(1) Important: When Salesforce disables TLS 1.0, we're ending support for Connect for Office. This change means that there's no guarantee that Connect for Office can establish a connection between Salesforce and Microsoft® Word or Excel. Even if sales reps can establish a connection, Salesforce no longer provides support or maintenance when there's an issue.

The system requirements for Connect for Office are:

- Microsoft<sup>®</sup> Excel 2007 to use the Excel add-in. (The Word add-in is not supported for Microsoft Word 2007.)
- Microsoft® Windows Vista® (32-bit only) Until Salesforce disables TLS 1.0.
- 1. Close all Microsoft® Office programs, including Word, Excel®, and Outlook®.
- 2. From your personal settings, enter Office in the Quick Find box, then select Connect for Office.
  - Tip: If you can't see the download page, ask your administrator for access.
- 3. Click Install Now.
- **4.** Click **Yes** when prompted to install Connect for Office. We recommend that you install Connect for Office to the default folder suggested by the installer.
- 5. After the installation completes, open Excel or Word, and select the **Salesforce** menu to begin using Connect for Office.
- **6.** The first time you open Word, you are prompted to enable macros from Salesforce. You must enable the macros and accept Salesforce as a macro publisher to use the Word add-in.
- Note: The Connect for Office installer edits the registry on your computer. If your organization imposes security that prevents you from editing the registry, log in as the administrator of your machine before installing Connect for Office or contact your IT department for assistance.

SEE ALSO:

Personalize Your Salesforce Experience

# Log Into Connect for Office

You need to log in to Salesforce before you can request data from your Salesforce reports. When Salesforce disables TLS 1.0, we're ending support for Connect for Office.

(1) Important: When Salesforce disables TLS 1.0, we're ending support for Connect for Office. This change means that there's no guarantee that Connect for Office can establish a connection between Salesforce and Microsoft® Word or Excel. Even if sales reps can establish a connection, Salesforce no longer provides support or maintenance when there's an issue.

EDITIONS

Available in: Salesforce Classic (not available in all orgs)

Available in: **All** Editions

- 1. Open Excel.
- 2. In Microsoft Office 2003 and earlier, select **Log In** from the **Salesforce** drop-down menu on the Excel toolbar. In Microsoft Office 2007, select the Salesforce tab on the Ribbon, click the **Reporting** drop-down menu, and then select **Log In**.
- **3.** Enter your Salesforce username and password.
- 4. Click Login.
- Note: If your organization restricts IP addresses, logins from untrusted IPs are blocked until they're activated. Salesforce automatically sends you an activation email that you can use to log in. The email contains a security token that you must add to the end of your password. For example, if your password is mypassword, and your security token is xxxxxxxxxxxx, you must enter mypasswordxxxxxxxxxxxx to log in.

## Import Reports Into Excel with Connect for Office

Import your custom or standard Salesforce reports into Excel so you can further analyze the data using Excel's formulas, charts, and pivot tables. When Salesforce disables TLS 1.0, we're ending support for Connect for Office.

(1) Important: When Salesforce disables TLS 1.0, we're ending support for Connect for Office. This change means that there's no guarantee that Connect for Office can establish a connection between Salesforce and Microsoft® Word or Excel. Even if sales reps can establish a connection, Salesforce no longer provides support or maintenance when there's an issue.

- 1. Create a custom report in Salesforce. You can also use any of the standard reports.
- 2. Open a blank worksheet in Excel.
- 3. Select the Salesforce tab on the Ribbon, click the **Reporting** drop-down menu, and then select **Import a Report...**.
  - Note: In Microsoft Office 2003 and earlier, select **Import a Report...** from the **Salesforce** drop-down menu on the Excel toolbar.
- **4.** Select a report from the list of standard and custom Salesforce reports available to you.
- 5. Specify where you want to put the report data in your Excel file.
  - a. Enter the name of your Excel worksheet in the Destination worksheet field.
  - **b.** In the Cell field, enter the uppermost cell where you want to begin putting the data.

    If the specified worksheet and cells already contain report data, Connect for Office moves the existing data over to make room for the new report data.
  - ? Tip: Avoid renaming worksheets that contain imported reports. When you do that the connection between the worksheet and your report is lost. You must import the report again to refresh the data.
- **6.** Choose **Raw Data** to import the data without formatting, subtotals, or grand totals. Choose **Formatted** to keep the colors, fonts, subtotals, and grand totals from the Salesforce report.

This is useful for importing large matrix reports with the data already summarized into a small table.

- Tip:
  - The Raw Data option is best if you're importing summary or matrix reports for use with Excel formulas and pivot tables.
  - Use the **Formatted** option if you're importing large matrix reports with the data already summarized into a small table.

#### 7. Click OK.

Tip: You can copy and paste data from Excel into other Office applications. Use the **Paste Special** option, rather than **Paste**, to reference the Excel data as a worksheet object. If the data then changes in Excel, you can right-click the object and update it automatically. See the Microsoft Word help for more information.

#### Refresh and Update Data with Connect for Office

Keep your Salesforce reports up to date in Excel by periodically refreshing the report data and any pivot tables you have created. When Salesforce disables TLS 1.0, we're ending support for Connect for Office.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: All Editions

# USER PERMISSIONS

To access reports in Excel:

Run Reports

AND

**Export Reports** 

(1) Important: When Salesforce disables TLS 1.0, we're ending support for Connect for Office. This change means that there's no guarantee that Connect for Office can establish a connection between Salesforce and Microsoft® Word or Excel. Even if sales reps can establish a connection, Salesforce no longer provides support or maintenance when there's an issue.

After logging into Salesforce, select any of the following options from the **Salesforce** Ribbon tab (or toolbar in Office 2003 and earlier):

- Refresh Existing Reports... Allows you to choose which reports you want to update in Excel.
  - 1. From the list of reports you have imported, select the reports to update.
  - 2. Optionally, select **Update Pivot Tables** to update any pivot tables you have created in Excel for the selected reports. The **Refresh All Reports** menu choice does this automatically.
  - 3. Click **Refresh Selected** to update the report data.

To remove reports from this list, select the report names and click **Delete Selected**. The reports are not removed from your Excel worksheet or from Salesforce, only from the list of reports available for refreshing.

• **Refresh All Reports** - Refreshes all of the reports that you have imported into your Excel file, including the pivot tables referenced by those reports.



#### Tip:

- If you write a formula, select an entire column rather than a range of cells, because the number of rows in your report may change when you refresh the report data. For example, use =Sum(Sheet2!E:E) to sum column E rather than =Sum(Sheet2!E1:E200).
- If you use the VLOOKUP and HLOOKUP functions in Excel to join data across different cell ranges, these functions may make
  report record IDs, which are 15-character alphanumeric IDs, case-sensitive. Make sure to use the correct case when identifying
  report records. See the Microsoft Excel help for more information.

# Organize Reports

Keep your reports at your fingertips by sorting them into folders and deleting unused reports. If you have a lot of reports, you can use the search field to find the one you need.

#### IN THIS SECTION:

- 1. Search for Reports and Dashboards from the Reports Tab in Salesforce Classic
  - When using the report and dashboard search, look for a report by name, description, or who created it or modified it last. Filter, sort, or search within a selected folder to refine your results.
- 2. Get the Information You Need From the Reports Tab List View

To see the information you want to see about your reports, you can resize, hide, reorder, sort columns, and select the number of records to display in your list view on the Reports tab.

- 3. Customize Report and Dashboard Lists in Lightning Experience
  - You can customize the columns in the list on the Reports or Dashboards tab.
- 4. Rename a Report

What's in a name? A report by any other name still answers your business questions. When it's time to change the name of a report, do so from report properties.

5. Describe a Report

Give your report a description to help people (and yourself) distinguish it.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

#### 6. Print a Report

Print a report from the run page of a report using your browser's print function.

#### 7. Keep Favorite Report Folders In View

Pin your most-used report and dashboard folders to the top of the folder list so you don't have to scroll down every time you need them.

#### 8. Hide Unused Report Types

If your users use only a subset of the available standard report types, you can hide the ones they don't need.

#### 9. Run Reports in the Background

Run large reports in the background so you can keep working in Salesforce without waiting for results to display. This is a good way to run data-intensive reports that might otherwise time out due to the large number of report results.

#### 10. Deliver Your Report

To get the information in your report to the people who need it, you can share the report's URL, make the report available for Chatter feeds, or export the data to another tool, such as Excel. You can also set the report to run on a schedule so that viewers always have the latest information

#### 11. Embedded Report Charts

Typically, users have had to navigate to the Reports tab to find data. But you can give them valuable information directly on the pages they visit often. To do that, embed report charts in detail pages for objects. When users see charts on pages, they are empowered to make decisions based on the data they see in the context of the page without going elsewhere. For example, an opportunity record shows important data directly on its detail page.

#### 12. Delete a Report

You can delete a selected report from the Reports tab or from its run page.

# Search for Reports and Dashboards from the Reports Tab in Salesforce Classic

When using the report and dashboard search, look for a report by name, description, or who created it or modified it last. Filter, sort, or search within a selected folder to refine your results.

1. On the Reports tab, type in the search box below All Folders.

Search looks up all folders. Filters are set to All Items and All Types to display all the folder's contents.

Salesforce searches these fields: **Name**, **Description**, **Last Modified By**, or **Created By**. Results are based on an exact match of what you typed with those fields.

If tagging is enabled and added to a custom report or dashboard, search by its tag in the global search box at the top of every page.

**2.** Refine results using these options:

#### To refine results by Do this

Туре

Select a filter:

- All Types
- Reports
- Dashboards

Type filters don't apply to report templates in standard report folders.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: Group, Essentials, Professional, Enterprise, Performance, Unlimited, and Developer Editions

## **USER PERMISSIONS**

To search for reports:

Legacy Folder Sharing
Run Reports

### Enhanced Folder Sharing

Run Reports AND access to the reports folder

| To refine results by | Do this  |  |  |  |  |
|----------------------|--|--|--|--|--|
| View                 | Select a filter:   |  |  |  |  |
|                      | • All Items  |  |  |  |  |
|                      | • Recently Viewed  |  |  |  |  |
|                      | • Items I'm Following  |  |  |  |  |
|                      | • Items I Created  |  |  |  |  |
|                      | • Items I'm Subscribed to  |  |  |  |  |
|                      | View filters.  |  |  |  |  |
| A selected folder    | Select a folder, then type in the search box.  |  |  |  |  |
|                      | Filters are set to All Items and All Types to display all the folder's contents.   |  |  |  |  |
| Sorting              | Click for the column and select <b>Sort Ascending</b> or <b>Sort Descending</b> . Sorting applies to all items in the list view, including the ones on subsequent pages. |  |  |  |  |

# Get the Information You Need From the Reports Tab List View

To see the information you want to see about your reports, you can resize, hide, reorder, sort columns, and select the number of records to display in your list view on the Reports tab.

Customize your list view as follows:

| Option   | Description  |  |  |  |
|--|--|--|--|--|
| To resize a column                                 | Click and drag its right margin to the preferred size.   |  |  |  |
| To hide a column                                   | Click > Columns on any column and deselect the column you want to hide.  |  |  |  |
| To reorder a column                                | Drag it to where you'd like it to appear.  |  |  |  |
| To sort a column                                   | Click for the column and select <b>Sort Ascending</b> or <b>Sort Descending</b> . Sorting applies to all items in the list view, including the ones on subsequent pages.                                       |  |  |  |
| To change the number of records displayed per page | Click in the lower left corner of the list and select the desired setting. You can view 10, 25, 50, 100, or 200 records at a time. When you change this setting, you return to the first page of list results. |  |  |  |
|  | Once set, however, you view the same number of records throughout the list. The record display setting on the Reports tab doesn't affect list views elsewhere in Salesforce.                                   |  |  |  |

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# USER PERMISSIONS

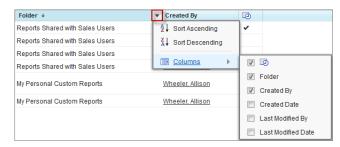
To view the Reports tab:

Legacy Folder Sharing
Run Reports

# Enhanced Folder Sharing

Run Reports in Public Folders

## **Select Column Header for Sorting and Hiding Columns**



## Customize Report and Dashboard Lists in Lightning Experience

You can customize the columns in the list on the Reports or Dashboards tab.

#### **Report Last Run Date**

Report Last Run Date is now included as a default column on the Reports tab, so you can easily determine when each report was last run.

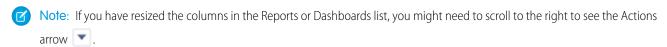
#### Sort on a Selected Column

To see the current sort order for a column, move your cursor to the column header. An up arrow indicates A to Z or lowest to highest ordering; a down arrow indicates the reverse. To change the sort order for a column, click the column header.



#### **Resize Columns**

To resize a column, move your cursor to the column divider and drag the divider to the left or right.

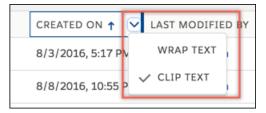




# Wrap or Clip Column Text

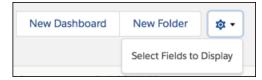
Some columns have an option to choose how content is displayed if it extends beyond the column width. Click the down facing arrow in the column header and select one of the following options:

- WRAP TEXT. Continue text on additional lines as needed so all content is shown.
- **CLIP TEXT**. Display only the content that fits in the column.



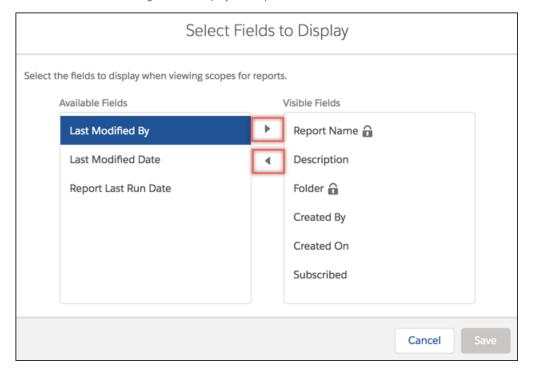
## **Select Columns to Display**

Click the gear icon and choose **Select Columns**.



Select columns on the left and click the right-facing arrow to move them to the **Visible Fields** area on the right. To hide a field, select it in the **Visible Fields** area and click the left-facing arrow to move it to the **Available Fields** area on the left.

Click **Save** to save the changes and redisplay the Reports or Dashboards list.



# Rename a Report

What's in a name? A report by any other name still answers your business questions. When it's time to change the name of a report, do so from report properties.

- **1.** Edit a report.
- **2.** Open the properties menu.

In Lightning Experience, click > Properties.

In Salesforce Classic, click Report Properties.

- **3.** Under Report Name, enter a new name for the report.
- 4. Click Save.

The report is renamed.

# EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: Group, Essentials, Professional, Enterprise, Performance, Unlimited, and Developer Editions

Available in: Enhanced Folder Sharing

# **USER PERMISSIONS**

To rename private reports:

Create and Customize Reports

To rename public or private reports:

Report Builder or Report Builder (Lightning Experience)

# Describe a Report

Give your report a description to help people (and yourself) distinguish it.

- 1. Edit a report.
- 2. Open the properties menu.

In Lightning Experience, click > Properties.

In Salesforce Classic, click Report Properties.

- 3. Under Report Description, give your report a helpful description.
- 4. Click Save.

The report's description is updated.

# EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: Group, Essentials, Professional, Enterprise, Performance, Unlimited, and Developer Editions

Available in: Enhanced Folder Sharing

# **USER PERMISSIONS**

To describe private reports:

Create and Customize Reports

To describe public or private reports:

Report Builder or Report Builder (Lightning Experience)

## Print a Report

Print a report from the run page of a report using your browser's print function.

- Click **Printable View** from the report's run page.
- From the browser dialog, do one of the following:
  - Open the report with your browser and use your browser's print function.
  - Save the file in Excel and use the print option in Excel.

SEE ALSO:

Export a Report

# EDITIONS

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Group, Professional, Enterprise, Performance, Unlimited, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy **Folder Sharing** 

## **USER PERMISSIONS**

To print reports:

**Legacy Folder Sharing** 

**Run Reports** 

AND

**Export Reports** 

**Enhanced Folder Sharing** 

**Run Reports** 

AND

**Export Reports** 

# Keep Favorite Report Folders In View

Pin your most-used report and dashboard folders to the top of the folder list so you don't have to scroll down every time you need them.

1. In the list of report and dashboard folders, hover over any folder, then click .

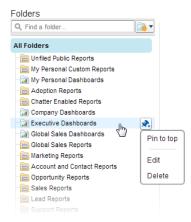


# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: All Editions

#### Reports & Dashboards



#### 2. Select Pin to top.

Your folder moves to the top of the folders list.

Each new folder that you pin goes to the top of the list, above any folders you have already pinned. To move a pinned folder back to the top, just pin it again.

# Hide Unused Report Types

If your users use only a subset of the available standard report types, you can hide the ones they don't need.

- 1. On the Reports tab, click New Report.
- 2. Select Select Report Types to Hide.

The green check mark next to a report means it's visible to everyone.

**3.** To hide the report type, click the check mark to change it to an X.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Group, Essentials, Professional, Enterprise, Performance, Unlimited, and Developer Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To hide unused reports:

Legacy Folder Sharing

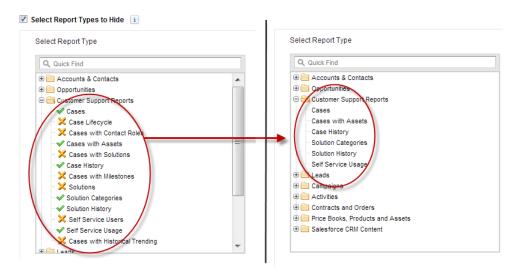
Manage Custom

Report Types

Enhanced Folder Sharing

Manage Custom Report Types

# Create New Report



Hidden report types don't show up when you use the search box on the Create New Report page.

If you hide all the report types in a folder, the folder is also hidden. However, if you later unhide the report type in the "Select Report Types to Hide" dialog box, users can see the folder.

## Run Reports in the Background

Run large reports in the background so you can keep working in Salesforce without waiting for results to display. This is a good way to run data-intensive reports that might otherwise time out due to the large number of report results.

Reports exported to the background run sequentially, one at a time. Therefore, the latest report exported to the background runs after all reports previously exported to the background finish running.

You can export an unlimited number of reports to the background.



**Note:** Running reports in the background is only supported in the Report Wizard. The Report Builder doesn't support running reports in the background.

#### IN THIS SECTION:

Export a Report to Run in the Background
 To set up a report to run in the background, you have to export it in a special way.

2. View and Manage Background Reports

Once you've set up a report to run in the background, you can view and manage it from the background report exports list.

#### SEE ALSO:

Create a Custom Report in Accessibility Mode
Create a Report
Customizing Reports
Export a Report

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: Group, Essentials, Professional, Enterprise, Performance, Unlimited, and Developer Editions

## **USER PERMISSIONS**

To export reports to the background:

 Background Report Export

To view reports exported to the background by other users:

 Background Report Export

AND

View All Data

To manage reports exported to the background by other users:

 Background Report Export

AND

Modify All Data

#### Export a Report to Run in the Background

To set up a report to run in the background, you have to export it in a special way.



**Note:** Running reports in the background is only supported in the Report Wizard. The Report Builder doesn't support running reports in the background.

- 1. Create a report in the Report Wizard.
- 2. Click Export Details and choose Run Background Export from the drop-down button.
  - Tip: When running an existing report, click this button to avoid waiting for report results to display.
- **3.** Select a file encoding setting and a file format in which to export the report.
- **4.** Choose how to save the report parameters.
  - Click Save revisions to save any parameter changes you made to the report before exporting. Selecting this option overwrites the parameters of the original report.
  - Click Save revisions to a copy to create a new report before exporting. If you
    select this option, enter a name and description for the report, and choose a report folder
    in which to save the report parameters.
  - Note: Only parameters are saved, not results. To view report results, you must view report details from the background report exports list.

#### 5. Click Start Background Export.

When your report has finished running and its results are ready for viewing, a link to the report details is emailed to you. You can download report results from the report exports list. You can only download data that you have permission to view.



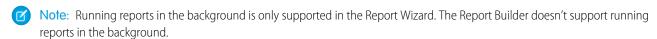
**Note:** If commas aren't appropriate for your locale, use a tab or other delimiter. Specify your delimiter in Data Loader Settings (**Settings** | **Settings**).

In the unlikely event that a background export of a report fails, an email notification is sent to you. Reports exported to the background can fail for a number of reasons. For example, between the time you exported the report and the export process began, fields may have been deleted from

the report, the report may have been deleted, or the status of the custom report type from which the report was created may have been changed to "In Development."

## View and Manage Background Reports

Once you've set up a report to run in the background, you can view and manage it from the background report exports list.



- 1. From Setup, enter *Background Report Exports* in the Quick Find box, then select **Background Report Exports**. The background report exports list appears.
- 2. View the details of a report exported to the background, such as its name, status, and location, by clicking the name of a report in the Job Name column.
- 3. Click **Cancel** or **Del** next to the name of a report to cancel a pending export or to delete a report from the background report exports list.

# **EDITIONS**

Available in: Salesforce Classic

Available in: **All** editions except **Database.com** 

# **USER PERMISSIONS**

To export reports to the background:

 Background Report Export

To view reports exported to the background by other users:

 Background Report Export

**AND** 

View All Data

To manage reports exported to the background by other users:

Background Report Export

**AND** 

Modify All Data

When a report exported to the background finishes running, it is available for viewing in the background report exports list for 48 hours. After 48 hours, the report is automatically deleted.

(1) Important: Reports deleted from the background report exports list are permanently deleted and *not* sent to the Recycle Bin.

**4.** Click **Refresh List** to view any reports that have been exported to the background since you began viewing the background report exports list.

## **Deliver Your Report**

To get the information in your report to the people who need it, you can share the report's URL, make the report available for Chatter feeds, or export the data to another tool, such as Excel. You can also set the report to run on a schedule so that viewers always have the latest information.

Administrators, or users with the "Manage Public Reports" and "Create and Customize Reports" permissions, can create custom reports that all users can view. They can also organize reports by creating custom report folders and configuring which groups of users have access to them.

To make a report public, run the report and click **Save As**. Give the report a name and choose a public report folder.

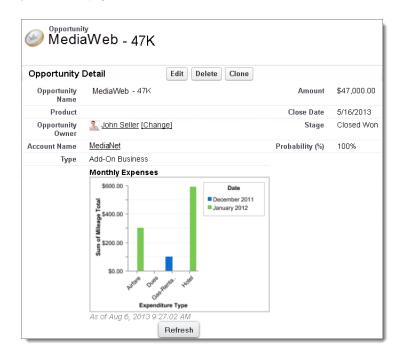
SEE ALSO:

Export a Report

Schedule a Report for Refresh

# **Embedded Report Charts**

Typically, users have had to navigate to the Reports tab to find data. But you can give them valuable information directly on the pages they visit often. To do that, embed report charts in detail pages for objects. When users see charts on pages, they are empowered to make decisions based on the data they see in the context of the page without going elsewhere. For example, an opportunity record shows important data directly on its detail page.



#### IN THIS SECTION:

1. Add a Report Chart to a Page Layout

To embed a report chart on object pages, edit the object's page layout with the enhanced page layout editor, then add the chart.

2. Customizing a Report Chart in a Page Layout

After you add a report chart to a page, you can customize it in the Chart Properties dialog box on the page layout editor.

3. Example of Report Charts on an Account Page

In this example, we've embedded two report charts on an important account page that show deals in the pipeline and open support cases for the account. From looking at the charts, the account executive can quickly gauge the account's activity and health.

4. Limits on Report Charts in Pages

Consider these limits when embedding charts in detail pages.

## Add a Report Chart to a Page Layout

To embed a report chart on object pages, edit the object's page layout with the enhanced page layout editor, then add the chart.

Before you add a chart, check that:

- Its source report is in a folder that's shared with users who need access. Reports in personal report folders are unavailable to add to a page.
- The source report format is summary or matrix.
- The source report has a chart.
- 1. Go to the page layout editor for the object that you're adding a chart to.
- 2. Click **Edit** next to the page layout.
- **3.** Click **Report Charts**.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

AND

Report Builder

Enhanced Folder Sharing

> Create and Customize Reports

AND



- **4.** In the Quick Find box, type the name of the report and click \( \) to find and select the report chart. You can browse up to 200 recently viewed reports by chart type in the Report Charts palette.
- **5.** Drag the chart to a new or existing section of the layout.
- **6.** Click on the chart to customize it.
- 7. Click Save.

The **Preview As** option is unavailable for report charts.

#### SEE ALSO:

Customizing a Report Chart in a Page Layout Example of Report Charts on an Account Page Limits on Report Charts in Pages Find Object Management Settings Page Layouts

## Customizing a Report Chart in a Page Layout

After you add a report chart to a page, you can customize it in the Chart Properties dialog box on the page layout editor.

#### IN THIS SECTION:

#### 1. Hiding a Report Chart that Shows an Error

A chart can sometimes, for whatever reason, show an error on the detail page instead of data. Since a chart with an error is not that useful, you have the option to hide it from viewers.

#### 2. Filtering Report Charts to Show Data Relevant to the Page

Charts usually filter to show relevant data when the chart's report type has a matching ID field for the record, such as Account ID for an account record. Occasionally, charts show data unfiltered. But you can set up a chart to be filterable if its report type has a lookup to the matching ID field.

#### 3. Refreshing Report Chart Data

Normally, charts refresh data once every 24 hours. But you can change a chart to refresh each time someone opens the page it's on. The refresh option is under the Chart Properties dialog box of the page layout editor. However, we recommend daily refresh over selecting the option, because users will soon reach the refresh limit or will wait for chart data to show until refresh is complete.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

#### Legacy Folder Sharing

Create and
Customize Reports

**AND** 

Report Builder

#### Enhanced Folder Sharing

Create and Customize Reports

AND

Hiding a Report Chart that Shows an Error

A chart can sometimes, for whatever reason, show an error on the detail page instead of data. Since a chart with an error is not that useful, you have the option to hide it from viewers.

To hide such a chart, select **Hide chart with error** from the Chart Properties dialog box in the page layout editor.



A chart can show an error on a page for one or more of these reasons.

- The viewer doesn't have access to the field that's used for filtering.
- The viewer doesn't have access to the report folder.
- The report chart has been deleted from the report.
- The report definition has changed.
- The report itself is no longer available.

Filtering Report Charts to Show Data Relevant to the Page

Charts usually filter to show relevant data when the chart's report type has a matching ID field for the record, such as Account ID for an account record. Occasionally, charts show data unfiltered. But you can set up a chart to be filterable if its report type has a lookup to the matching ID field.

#### Make a Chart Filterable

When the chart's report type doesn't have a matching ID field for the record, the chart is not filtered. Instead, it shows all data.

A report chart on open cases shows information for all accounts on an account record. To make the chart filterable, edit the layout of the chart's cases custom report type, and add the Account ID field via lookup. Now when you view an account record, the chart is filtered.

#### **Pick a Relevant Filter**

Sometimes when there are multiple ID fields available to filter, the chart may not show any data. In such situations, select the most relevant ID field from the **Filtered by** drop-down in the Chart Properties dialog box. A chart on open opportunities on account records is filtered by Partner Account ID, which isn't that useful. But we can edit the chart properties and choose Account ID from the drop-down to filter by the account record.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

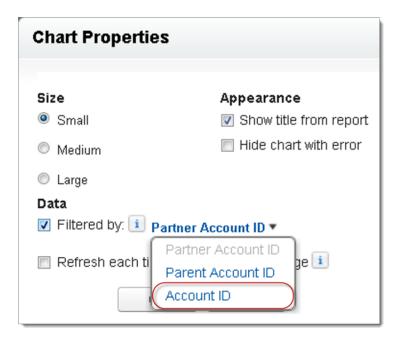
**AND** 

Report Builder

## Enhanced Folder Sharing

Create and Customize Reports

AND



Note: Charts can't filter for relevant data if the source report has reached the limit of 20 field filters.

#### Refreshing Report Chart Data

Normally, charts refresh data once every 24 hours. But you can change a chart to refresh each time someone opens the page it's on. The refresh option is under the Chart Properties dialog box of the page layout editor. However, we recommend daily refresh over selecting the option, because users will soon reach the refresh limit or will wait for chart data to show until refresh is complete.

#### **Daily Refresh**

Charts refresh data once every 24 hours. If within that time users want the latest, they can click **Refresh** on the chart.

## **Refresh When User Opens the Page**

To change a chart's normal refresh, select **Refresh each time a user opens the page** in the Chart Properties dialog box of the page layout editor. This option triggers a chart refresh each time someone opens the page the chart is on. Selecting the option is not recommended for two reasons.

- There's a risk of reaching the chart refresh limit faster. Refreshes count towards the hourly limit for each user and organization.
- For reports that take longer to run, selecting this option can make users wait to see chart data.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

**AND** 

Report Builder

#### Enhanced Folder Sharing

Create and Customize Reports

AND

# Example of Report Charts on an Account Page

In this example, we've embedded two report charts on an important account page that show deals in the pipeline and open support cases for the account. From looking at the charts, the account executive can quickly gauge the account's activity and health.

# EDITIONS

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

AND

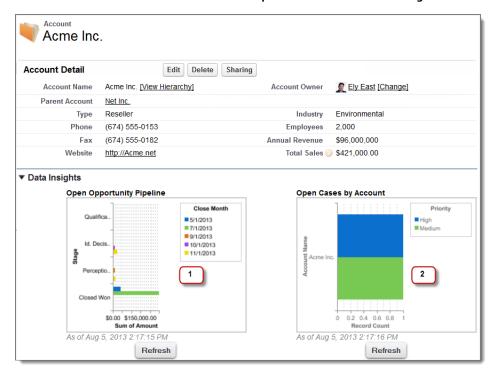
Report Builder

# Enhanced Folder Sharing

Create and Customize Reports

AND

#### **Report Charts on an Account Page**



- 1. The pipeline chart shows opportunities for the account in various stages including two that were won. The account executive can hover on the chart to get the value of each opportunity (Values are highlighted if the source report chart has hover enabled). She is able to click the chart, go to the report, and get more details for these opportunities.
- 2. From the charts on open cases, she can see there are a couple of unresolved support issues for the account. She can click the chart, drill into the report for case details and follow up with the support engineers to get them resolved before a crucial meeting with the client.

# Limits on Report Charts in Pages

Consider these limits when embedding charts in detail pages.

- You can have two report charts per page.
- You can only add report charts from the enhanced page layout editor. The mini console and the original page layout editor are not supported.
- On detail pages, users can refresh up to 100 report charts every 60 minutes.
- Your org can refresh up to 3,000 report charts every 60 minutes.

#### SEE ALSO:

Add a Report Chart to a Page Layout

Example of Report Charts on an Account Page

# EDITIONS

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

AND

Report Builder

## Enhanced Folder Sharing

Create and Customize Reports

AND

# Delete a Report

You can delete a selected report from the Reports tab or from its run page.

1. Delete a report in one of two ways:

| Option                               | Description                                 |
|--------------------------------------|---|
| To delete from the Reports tab       | Next to the report, click > <b>Delete</b> . |
| To delete from the report's run page | Click <b>Delete</b> .                       |

#### 2. Click OK.

Deleted reports are moved to the Recycle Bin. You can't delete reports in others' personal folders. You also can't delete reports used by dashboard components or reporting snapshots unless you first delete the dashboard component or reporting snapshot.

# EDITIONS

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To delete reports in My Personal Custom Reports folder:

Legacy Folder Sharing

Create and
Customize Reports

Enhanced Folder Sharing

> Create and Customize Reports

To delete reports in public folders:

Legacy Folder Sharing

Manage Public Reports

Enhanced Folder Sharing

Manage Reports in Public Folders

# Report Limits, Limitations, and Allocations

As you report on your data, be aware of these limits, limitations, and allocations.

# Salesforce Reports and Dashboards Allocations

| Feature   | Personal<br>Edition | Contact<br>Manager | Group<br>Edition | <b>Potesiand</b><br>Edition | Enterprise<br>Edition | Unlimited<br>and<br>Reference<br>Edition | Developer<br>Edition |
|---|---------------------|--------------------|------------------|-----------------------------|-----------------------|--|----------------------|
| Custom report types (Limits apply to all custom report types regardless of development status.) | N/A                 |                    |                  | 50                          | 200                   | 2,000                                    | 400                  |
| Dashboard filters   |                     |                    |                  | 3 per dashboard             |                       |  |                      |
| Dynamic<br>dashboards per org   | N/A                 |                    |                  |                             | Up to 5               | Up to 10                                 | Up to 3              |
| Field filters per report <sup>1</sup>   | 20                  |                    |                  |                             |                       |  |                      |
| Formulas per report   | 5                   |                    |                  |                             |                       |  |                      |
| Reporting snapshots   | N/A                 |                    |                  | 1 <sup>2, 3, 4</sup>        | 1 <sup>2</sup>        | 2 <sup>2</sup>                           | 1 <sup>2, 3, 4</sup> |
| Scheduled dashboard refreshes   | N/A                 |                    |                  |                             | 1 <sup>2</sup>        | 2 <sup>2</sup>                           | N/A                  |
| Scheduled reports<br>per hour<br>(Emailed reports can<br>be up to 10 MB.)                       | N/A                 |                    |                  | 1 <sup>2, 3, 5</sup>        | 1 <sup>2</sup>        | 2 <sup>2</sup>                           | 1 <sup>2, 3, 5</sup> |

# EDITIONS

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

Salesforce retains historical data for the previous three months, plus the current month.

The following Salesforce Reports and Dashboards limits, limitations, and allocations apply to all supported editions.

### **Report Limits, Limitations, and Allocations**

• The report builder preview shows a maximum of 20 rows for summary and matrix reports, and 50 rows for tabular.

<sup>&</sup>lt;sup>1</sup> These allocations apply to the report builder. If you're using the report wizard, the allocation is 10.

<sup>&</sup>lt;sup>2</sup> Up to 200 total.

<sup>&</sup>lt;sup>3</sup> Off-peak hours (between 6 PM and 3 AM local time) only.

<sup>&</sup>lt;sup>4</sup> Limited to one preferred start time per day.

<sup>&</sup>lt;sup>5</sup> Limited to three preferred start times per day.

• You can't have more than 250 groups or 4,000 values in a chart. If you see an error message saying that your chart has too many groups or values to plot, adjust the report filters to reduce the number. In combination charts, all groups and values count against the total.

- Reports display a maximum of 2,000 rows. To view all the rows, export the report to Excel or use the printable view for tabular
  and summary reports. For joined reports, export is not available, and the printable view displays a maximum of 20,000 rows.
  - Summary and matrix reports display the first 2,000 groupings when Show Details is disabled.
  - Matrix reports display a maximum of 400,000 summarized values.
  - Matrix reports display a maximum of 2,000 groupings in the vertical axis when Show Details is disabled. If there are more
    than 400,000 summarized values, rows are removed until the 2,000 groupings limit is met, then columns are removed until
    the number of summarized values moves below 400,000.
  - Matrix reports that return more than 2,000 rows don't show details. If you click **Show Details**, nothing happens. You can only view the report with details hidden.
- Up to five metrics display in the Lightning Experience report header. Metrics such as summarized fields appear in the order that they appear in the report, left to right. The grand total, when shown, always displays.
- When reports that have groupings are viewed in the Salesforce app, they're converted to tabular reports.
- By default, reports time out after 10 minutes.
- In a joined report, each block can have up to 100 columns. A joined report can have up to 5 blocks.
- You can add up to 10 custom summary formulas to each block in a joined report. A joined report can have a total of 50 custom summary formulas.
- Each joined report can have up to 10 cross-block custom summary formulas.
- When you filter on standard long text area fields, such as Description or Solution Details, only the first 1000 characters of the field are searched for matches in reports.
- Only the first 254 characters in a rich text area or a long text area are displayed in a report.
- Summary fields on tabular, summary, and matrix reports can display up to 21-digits.
- Reports can't be filtered on custom long text area fields.
- Joined reports require that the new user interface theme is enabled. Users without the new theme are unable to create, edit, or run joined reports.
- Forecast reports include only opportunities that are set to close within the forecast period, except those assigned to the Omitted forecast category.
- Internet Explorer 6 is not supported for joined reports.

## **Dashboard Limits, Limitations, and Allocations**

- A dashboard filter can have up to 50 options. By default, 10 options are enabled. Contact Salesforce to extend your limit.
- Each dashboard can have up to 20 components.
- It's not possible to filter on bucket fields. However, it is possible to use a report filtered on a bucket field on the dashboard page.
- A dashboard table or chart can display up to 20 photos.
- You must wait at least one minute between dashboard refreshes.

## **Report Type Limits, Limitations, and Allocations**

A custom report type can contain up to 60 object references. For example, if you select the maximum limit of four object
relationships for a report type, then you could select fields via lookup from an additional 56 objects. However, users will receive
an error message if they run a report from a custom report type and the report contains columns from more than 20 different
objects.

• You can add up to 1000 fields to each custom report type.

#### Reporting Snapshot Limits, Limitations, and Allocations

- The maximum number of rows you can insert into a custom object is 2,000.
- The maximum number of runs you can store is 200.
- The maximum number of source report columns you can map to target fields is 100.

#### Filtering Limits, Limitations, and Allocations

Only the first 255 characters in a custom text field count for filtering purposes.

#### **Embedded Report Charts Limits, Limitations, and Allocations**

- You can have two report charts per page.
- You can only add report charts from the enhanced page layout editor. The mini console and the original page layout editor are not supported.
- On detail pages, users can refresh up to 100 report charts every 60 minutes.
- Your org can refresh up to 3,000 report charts every 60 minutes.

#### List View Limits, Limitations, and Allocations

• Only the first 255 characters are shown for custom long text area fields in list views.

#### **Bucket and Bucket Field Limits, Limitations, and Allocations**

- Each report can include up to five bucket fields.
- Each bucket field can contain up to 20 buckets.
- Each bucket can contain up to 20 values.
- Bucket fields are available for use only in the report where they're generated. To use a bucket in multiple reports, create the field for each report, or create a separate formula field for the object that's dependent on the bucket.
  - Note: These limits don't apply to the use of Other as permitted within the bucket field's setup.
- Buckets and bucket fields aren't available for reports that include external objects.
- If a bucket field's source column has a custom index, and you filter by the bucket field, then the performance gains from the custom index are lost.

#### Historical Trend Report Limits, Limitations, and Allocations

- Salesforce retains historical data for the previous three months, plus the current month.
- Up to 5 million rows of historical trending data can be stored for each object. Historical data capture stops when the limit is exceeded. The admin is alerted by email when any object reaches 70 percent of the limit, and again if the limit is exceeded.
- Each historical trend report can contain up to 100 fields. In Opportunities reports, this includes the standard preselected fields, which can't be disabled.
- Formula fields are not supported.
- Row limit filters are not supported.
- The summary report format is not supported.
- You can specify up to five historical snapshot dates in each historical trend report.
- You can use up to four historical filters on each historical trend report.
- These field types are supported: Number, Currency, Date, Picklist, Lookup.
- Dated exchange rates are not supported. When you run the historical trend report, it only uses the latest dated exchange rate.
- Internet Explorer 6 is not supported.

- You can't subscribe to historical trend reports.
- The Report Wizard is not supported. Historical trend reports can only be created with the Report Builder.
- Historical trend reporting with charts is supported in Lightning Experience, but tabular views of historical trend reports aren't
  available.

#### **External Object Report Limits, Limitations, and Allocations**

If your report includes an external object, the results probably don't reflect the full data set. External objects behave similarly to custom objects, except that they map to data that's stored outside your Salesforce org. A report that includes an external object fetches up to 2,000 records for the primary object and can encounter callout limits while fetching external object data. If the report results in few or no rows, try customizing the report to obtain more relevant external object rows.

#### **Cross Filters**

- Each report can have up to three cross filters.
- Each cross filter can have up to five subfilters.
- Filter logic applies only to field filters, not cross filters.

# Reports and Dashboards API Limits, Limitations, and Allocations

The following limits, limitations, and allocations apply to both the Reports and Dashboards REST API and Reports and Dashboards API via Apex.

- Cross filters, standard report filters, and filtering by row limit are unavailable when filtering data.
- Historical trend reports are only supported for matrix reports.
- The API can process only reports that contain up to 100 fields selected as columns.
- A list of up to 200 recently viewed reports can be returned.
- Your org can request up to 500 synchronous report runs per hour.
- The API supports up to 20 synchronous report run requests at a time.
- A list of up to 2,000 instances of a report that was run asynchronously can be returned.
- The API supports up to 200 requests at a time to get results of asynchronous report runs.
- Your organization can request up to 1,200 asynchronous requests per hour.
- Asynchronous report run results are available within a 24-hour rolling period.
- The API returns up to the first 2,000 report rows. You can narrow results using filters.
- You can add up to 20 custom field filters when you run a report.
- Your org can request up to 200 dashboard refreshes per hour.
- Your org can request results for up to 5,000 dashboards per hour.

# **Troubleshoot Reports**

Use these tips to help solve problems that arise when you're working with reports.

#### IN THIS SECTION:

1. Why can't I run a report on a custom or external object?

Sometimes an object, its report types, or your access isn't set up completely.

#### 2. Why do my chart labels overlap?

Sometimes the labels for your charts can overlap and be difficult to read. There may be too much data in the same space, or the segments or wedges of the chart may be too small.

#### 3. Why doesn't my report return any data?

Check with your administrator to make sure that you have access to the records you're trying to report on. If you're still not seeing any results in your report, try casting a wider net.

#### 4. Why can't I see formula options in report builder?

If you can't see the Add Formula option in the Fields pane of report builder, change your report format to summary, matrix, or joined. Formulas don't show up for tabular reports.

#### 5. Why doesn't my report return the data I expect?

Check your filters, groupings, fields, report type, and role or user hierarchy to make sure that you are asking the right questions of your data.

#### 6. What are some common report limits?

Here are some common report limits. To see a full list of analytics limits, see the Salesforce Limits Quick Reference Guide.

#### 7. Why am I getting an "obsolete report" error message?

You may be trying to report on data that isn't available.

#### 8. Improve Report Performance

Many factors can cause a report to perform poorly or to time out. You can address most of them with simple changes, such as using the correct filter operators, applying more filters, and reducing the amount of data.

#### 9. Why is an old role name appearing in the "role hierarchy" trail of my report?

Changes to role names aren't automatically updated in reports. To see the latest role name, change the Role name as displayed on reports field for the role record.

# Why can't I run a report on a custom or external object?

Sometimes an object, its report types, or your access isn't set up completely.

If you can't run a report on a custom or external object, check with your admin that the following conditions are true.

- Reports are enabled on the custom or external object.
- You have access to the object and its records.
- The object and its custom report types are deployed.

# Why do my chart labels overlap?

Sometimes the labels for your charts can overlap and be difficult to read. There may be too much data in the same space, or the segments or wedges of the chart may be too small.

To fix overlapping labels, try the following:

# EDITIONS

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

- **Enlarge the chart.** Change the chart size in the report to large or extra large or make the dashboard column wider.
- Remove extra grouping levels. Reduce the number of grouping levels by using a different chart type. For example, horizontal bar charts have fewer values than grouped horizontal bar charts.
- Use horizontal charts. Horizontal charts use different spacing than vertical charts. The advantage of the horizontal bar charts is that the chart can be extended vertically to show numerous groupings, though the width is fixed. Depending on chart settings, you can also display Chatter photos.
- Change the scale. Set the chart to use larger units. For example, show values as multiples of 1000 or 1000000.
- Group small values. Select the Combine Small Groups into 'Others' option for pie, donut, and funnel charts.

## Why doesn't my report return any data?

Check with your administrator to make sure that you have access to the records you're trying to report on. If you're still not seeing any results in your report, try casting a wider net.

- Show more than your own records. For example, select **Show** > **All accounts**.
- Expand your time frame filters. For example, select All Time for Range, or select a broader custom range.
- Choose field filter operators carefully. If you select Account Owner equals John James, you limit potential results to exactly "John James." If you don't see the results you expect, consider expanding the selection by using Account Owner contains James instead.
- Check your filter logic. Make sure your combination of conditions isn't excluding all data.

Limiting your report can improve performance, but make sure you're not filtering out the data you want to see.

If your report includes an external object, the results probably don't reflect the full data set. External objects behave similarly to custom objects, except that they map to data that's stored outside your Salesforce org. A report that includes an external object fetches up to 2,000 records for the primary object and can encounter callout limits while fetching external object data. If the report results in few or no rows, try customizing the report to obtain more relevant external object rows.

## Why can't I see formula options in report builder?

If you can't see the 🙀 Add Formula option in the Fields pane of report builder, change your report format to summary, matrix, or joined. Formulas don't show up for tabular reports.

## Why doesn't my report return the data I expect?

Check your filters, groupings, fields, report type, and role or user hierarchy to make sure that you are asking the right questions of your data.

#### **Filters**

Make sure to include all the data you want.



🚺 Tip: To change a report filter, hover over it and click **Edit** or **Remove**. Your filters display when you run your report; click **Edit** on that page to make additional changes.

#### Groupings

When you group by a field, you remove it from the details of the report. If you export the report, you see the field, though it does not appear in the detail area.

#### **Fields**

After checking your groupings, check your fields. If your report contains multiple related records—for example, an account, its opportunities, and their products—look at the detail pages for the account record, opportunity record, and product line item to

ensure that the fields contain data. If the data isn't available in the format you want, work with your Salesforce administrator to add formula fields to get the data. When formula fields are added to an object, they appear in record detail pages and in reports.

#### Report Type

The report type selected may not be appropriate or the records anticipated may not share the relationship between objects required for the report type. When choosing a report, be sure you understand which fields are available in the report type.

If your report type includes both parent and child objects, but no child fields are used in a report, the report shows parent records whether they have a child record or not.

#### Hierarchy

**Hierarchy** options let you drill down to different data sets based on the role or user hierarchy. The selected hierarchy level, or its default role, may affect the data shown.



**Note:** Hierarchy applies to activity and opportunity reports.

#### **External Objects**

If your report includes an external object, the results probably don't reflect the full data set. External objects behave similarly to custom objects, except that they map to data that's stored outside your Salesforce org. A report that includes an external object fetches up to 2,000 records for the primary object and can encounter callout limits while fetching external object data. If the report results in few or no rows, try customizing the report to obtain more relevant external object rows.

## What are some common report limits?

Here are some common report limits. To see a full list of analytics limits, see the Salesforce Limits Quick Reference Guide.

| Feature                                      | Limit   | Editions Info  |
|--|---|--|
| Bucket fields per report                     | Up to 5 (each bucket field can have 20 buckets)   | Available in Enterprise, Unlimited, Performance, and Developer Editions.               |
| Matrix reports                               | Up to 400,000 summarized values. Data exceeding this limit is not displayed.  | Available in all editions.   |
| Scheduled reports per organization           | One or two per hour, based on edition   | Available in Professional, Enterprise, Unlimited, Performance, and Developer Editions. |
| Field filters per report                     | Up to 20  | Available in all editions.   |
| Formulas per report                          | Up to 5   | Available in all editions.   |
| Rows displayed in a report                   | Up to 2,000. To view all the rows, export the report to Excel or use the printable view for tabular and summary reports. For joined reports, export is not available, and the printable view displays a maximum of 20,000 rows. | Available in all editions.   |
| Rows displayed in the report builder preview | Up to 20 rows for summary and<br>matrix reports, and up to 50<br>rows for tabular   | Available for all editions.  |

## Why am I getting an "obsolete report" error message?

You may be trying to report on data that isn't available.

Data may be unavailable because:

- An object in the report isn't enabled for reporting anymore.
- A lookup relationship used by objects in the report has been deleted or modified.
- An object in the report has been deleted.
- You don't have "View" permissions for an object in the report.

## Improve Report Performance

Many factors can cause a report to perform poorly or to time out. You can address most of them with simple changes, such as using the correct filter operators, applying more filters, and reducing the amount of data.

Watch this video for quick tips on 
Making Your Reports Run Faster (Salesforce Classic).

A report can take anywhere from a few seconds to several minutes to run. Occasionally, a report is so complex that it exceeds the timeout limit and fails. If the report is slow to load, it's usually because it is:

- Querying too many objects
- Dealing with intricate lookups
- Has too many fields

For example, say that you run a sales team and want to see how many Leads each of your salespeople has. You build a report that returns all the leads in your company. Now you have all the data you

need, but also some that you don't, and your report takes a long time to run. To make your report run faster, filter it so that it only returns Leads assigned to your team. If you need your report to run even faster, consider filtering by time. Do you need to see Leads from last year, or the year before? If not, add a second filter which scopes your report to this year only. Now your report runs as fast as lightning!

If you can't view a report and want to edit it to avoid the time-out, append ?edit=1 to the report URL. Doing so gets you into edit mode, where you can adjust the criteria. Try these tips to get your reports to run more efficiently.

- When filtering, use the equals or not equal to operators instead of contains or does not contain. For example,
   use Account Owner equals John James, not Account Owner contains John. Choose AND rather than OR for filter logic
- To narrow your report's date range, use time frame filters. For example, use Last 30 Days instead of Current FY.
- Set time frame filters by choosing a Date Field and Range to view. Only records for that time frame are shown.
- Reduce the number of fields in the report by removing unnecessary columns or fields.
- If you receive an error message saying that your activity report has too many results, filter on a picklist, text, or date field. Alternatively, rerun the report using a different activity data type such as "Activities with Accounts" or "Activities with Opportunities".
- Add time filters, scope filters, and filter criteria to the report to further narrow the results.

# Why is an old role name appearing in the "role hierarchy" trail of my report?

Changes to role names aren't automatically updated in reports. To see the latest role name, change the Role name as displayed on reports field for the role record.

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Analytics Create a Report

# Create a Report

Create a report to get an up-to-the-minute view of an aspect of your business, such as the status of customers, opportunities, support cases, and so on.

To create a new report:

- 1. From the Reports tab, click **New Report**.
- 2. Select the report type for the report, and click **Create**.
- **3.** Customize your report, then save or run it.

SEE ALSO:

**Customizing Reports** 

# **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# **USER PERMISSIONS**

To create, edit, and delete reports:

**Legacy Folder Sharing** 

Create and Customize Reports

AND

Report Builder

# Enhanced Folder Sharing

Create and
Customize Reports

AND

Analytics Creating a Custom Report

# Creating a Custom Report

You can customize standard reports, or you can build custom reports from scratch to suit the exact needs of your organization.

Users with the "Manage Custom Report Types" permission can define custom report types that extend the types of reports from which all users in their organization can create or update custom reports. A *report type* defines the set of records and fields available to a report based on the relationships between a primary object and its related objects. Reports display only records that meet the criteria defined in the report type. Salesforce provides a set of pre-defined standard report types; administrators can create custom report types as well.

Users with the "Manage Reporting Snapshots" permission can create and schedule snapshots. A reporting snapshot lets you report on historical data. Authorized users can save tabular or summary report results to fields on a custom object, then map those fields to corresponding fields on a target object. They can then schedule when to run the report to load the custom object's fields with the report's data. Reporting snapshots enable you to work with report data similarly to how you work with other records in Salesforce.

# **EDITIONS**

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To run reports:

Legacy Folder Sharing
Run Reports

Enhanced Folder Sharing

Run Reports

To schedule reports:

Legacy Folder Sharing Schedule Reports

Enhanced Folder Sharing

Schedule Reports

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

**AND** 

Report Builder

Enhanced Folder Sharing

Create and Customize Reports

AND

## Create a Custom Report in Accessibility Mode



**Note**: This topic only applies if you're not using report builder. *Report builder* is a visual editor for reports.

To create a new custom report using the custom report wizard:

- 1. From the Reports tab, choose the **Create New Custom Report** button.
- **2.** Select the type of data for the report, and click **Next**.

To create reports on custom objects, choose the **Other Reports** report type category, unless the custom object has a relationship with a standard object. When the custom object has a master-detail relationship with a standard object or is a lookup object on a standard object, select the standard object for the report type category instead.

To create reports on an external object, choose the **Other Reports** category. To create reports on an external object with a child standard or custom object, select the category containing the custom report type that you created for that relationship.

- **3.** Choose the report format.
- **4.** Follow the steps of the wizard using the **Next** button. For each report, customize the following:
  - Specify Row and Column Headers: On the Select Grouping page for summary and matrix reports, choose the fields by which you want to group and subtotal the data. In a summary report, choosing more than one sort field allows you to subsort your data. For matrix reports, select summary fields for the row labels and column headings. When grouping by a date field, you can further group the data by a specific time period such as days, weeks, or months.



**Note:** On the Select Grouping page, if you set Group Dates By to "Calendar Month in Year" or "Calendar Day in Month," you won't be able to drill down to those date groupings in reports or dashboards. Users are taken to the unfiltered report instead.

- **Summarize Data:** On the Select Columns to Total page, choose the types of summary information to display for numeric fields.
- Build Custom Summary Formulas: On the Select Columns to Total page for summary
  and matrix reports, create custom summary formulas to calculate additional totals based
  on existing report summaries. A formula is an algorithm that derives its value from other
  fields, expressions, or values. See Add a Summary Formula Column to a Report on page
  852.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

AND

Report Builder

#### Enhanced Folder Sharina

Create and Customize Reports

AND

Report Builder

- Choose Fields: On the Select Columns page, choose the fields to display in the report. You can display only those fields that are visible in your page layout and field-level security settings. If you choose the Description field or any other long text field, only the first 255 characters are displayed.
- Only the first 254 characters in a rich text area or a long text area are displayed in a report.
- Order Columns: On the Order Columns page, select the order for displaying the chosen fields.
- **Limit Report Results:** On the Select Criteria page, choose the appropriate settings from the drop-down lists, then use the filter options filter options to limit the report to records with specific data.

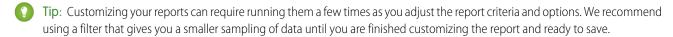
The report wizard supports up to 10 filters. On reports with more than 10, additional filters are dropped and the report shows an error for any filter logic.

**Analytics** Edit a Numeric Bucket Field



🊺 Tip: To use a tabular report on a dashboard, first limit the row count, by setting the Rows to Display option, the sort column, and the order on the Select Criteria page of the report. You can't use gauge or metric components on dashboards using tabular reports.

- Chart Settings: On the Select the Chart Type and Report Highlights step of the report wizard, set chart properties to display your report data in a chart. Charts are available only for summary and matrix reports.
- 5. Click **Run Report** to view the report, or click **Export Details** to save the report as an Excel file or other format.



## Edit a Numeric Bucket Field

A numeric bucket helps you sort data that can be described in terms of numbers. In the Edit Bucket Field overlay for a numeric field:

- 1. For Source Column, select the field you want to bucket.
- 2. Enter a bucket field name. This appears as the column name in the report. Since a bucket field is intended to have multiple buckets (known as "ranges" in numeric bucket fields) within it, a good name for a bucket field describes the scope of the ranges. For example, a bucket field named "Size" could have ranges of "Small," "Medium," and "Large".
- 3. Define your ranges by entering a number and a name. The range names appear as values in your new column.

Each range is greater than the lower number up to and including the higher number.

To remove all ranges and start over, click **Clear All**.

- 4. To move all empty values to the bucket containing the value zero, enable Treat empty source column values in the report as zeros. If this is disabled, unbucketed values appear as a dash (-) in the column.
- 5. Click OK.

In a report, numeric bucket columns are sorted by range values.

SEE ALSO:

Numeric Bucketing Example: Deal Size

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Enterprise, Performance, Unlimited, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To create, edit, and delete reports:

**Legacy Folder Sharing** 

Create and **Customize Reports** 

AND

Report Builder

**Enhanced Folder Sharing** 

> Create and **Customize Reports**

AND

## Numeric Bucketing Example: Deal Size

To gain insight into your deals, use bucketing to group by deal size instead of looking at individual deals. This lets you concentrate on the large deals that affect your quota the most.

- 1. Create or edit a standard opportunity report.
- 2. In the Fields pane of the report builder, double-click **Add Bucket Field** or drag it into the report.
- 3. For Source Column, select Amount.
- 4. For Bucket Field Name, enter Deal Size.
- **5.** Under Define Ranges, enter 1000 in the first row. This represents the maximum for a small deal. Name this range *Small*.
- **6.** Click **Add** and enter 25000 in the second row. This represents the maximum for a medium-size deal. Name this range *Medium*.
- **7.** By default, the last range is any amount over the previous range. You don't need to enter a number for this range. Name this range *Large*.

#### 8. Click OK.

With numeric bucket fields, each range is greater than the lower number, up to and including the higher number. Once you've set up this bucket field, amounts will be bucketed as follows:

| Amounts       | Bucket |
|---------------|--------|
| 1000 or less  | Small  |
| 1001 to 25000 | Medium |
| 25001 or more | Large  |

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To create, edit, and delete reports:

#### Legacy Folder Sharing

Create and Customize Reports

AND

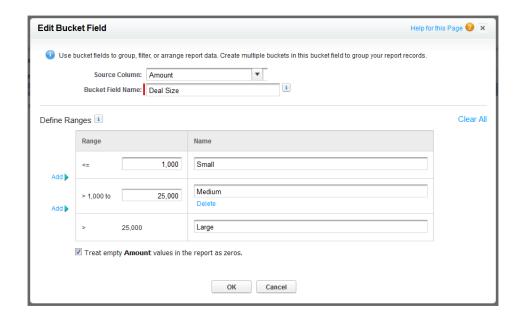
Report Builder

# Enhanced Folder Sharing

Create and Customize Reports

AND

**Analytics** Edit a Picklist Bucket Field



SEE ALSO:

Edit a Numeric Bucket Field

## Edit a Picklist Bucket Field

A picklist bucket field contains items that can be selected from a list.



- Note: The following picklist types can't be bucketed.
- Record types
- Divisions
- Multi-value picklists
- The Type picklist in Activity reports

In the Edit Bucket Field overlay for a picklist field:

- 1. For Source Column, select the field you want to bucket.
- 2. Enter a bucket field name. This appears as the column name in the report.

Since a bucket field is intended to have multiple buckets within it, a good name for a bucket field describes the scope of the buckets. For example, a bucket field named "Priority" could have "High," "Medium," and "Low" buckets.

- Important: Picklist bucket names must include one or more letters or symbols. If a picklist bucket field includes a bucket whose name contains only numbers, the bucket field cannot be saved.
- 3. To create a bucket, click **New Bucket** and enter a bucket name. Create multiple buckets to group your report records.
- 4. To find a particular value in the list of values, type the first few characters of its name in the Quick Find box. As you type, items that match your search terms appear in the menu.
- 5. Select values and drag them into a bucket. Alternatively, select values, click Move To, and select a bucket or enter a new bucket name.

While you're bucketing values, use these functions as needed:

- To show all the values in the report, click **All Values**.
- To show the values for a particular bucket, click the bucket name.
- To remove values from a bucket, select the values and drag them to another bucket, or drag them to Unbucketed Values.
- Note: You can bucket only active picklist values. Inactive picklist values aren't shown.
- **6.** To move all unbucketed values into a bucket named "Other", enable Show unbucketed values as "Other". If this is disabled, unbucketed values appear in the bucket column with the value name.

#### 7. Click OK.

In a report, picklist bucket columns are sorted by the bucket position as shown in the Edit Bucket Field dialog box, followed by "Other" if Show unbucketed values as "Other" is enabled, or the unbucketed picklist item names if Show unbucketed values as "Other" is disabled.

SEE ALSO:

Picklist Bucketing Example: Industry Types

## Picklist Bucketing Example: Industry Types

Use a picklist bucket field to sort your accounts by their industry.

- 1. Create or edit a standard accounts report, making sure at least a few records appear in the report.
- 2. In the Fields pane of the report builder, double-click **Add Bucket Field** or drag it into the report.
- **3.** For Source Column, select Industry.
- 4. For Bucket Field Name, enter Industry Types.
- **5.** Click **New Bucket** and name the bucket *IT*.
- **6.** Click **New Bucket** and name the bucket *Bio Tech*
- 7. Click **New Bucket** and name the bucket *Telecom*.
- **8.** Select values and drag them into the appropriate buckets.
- 9. Enable Show unbucketed values as "Other".
- 10. Click OK.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and
Customize Reports

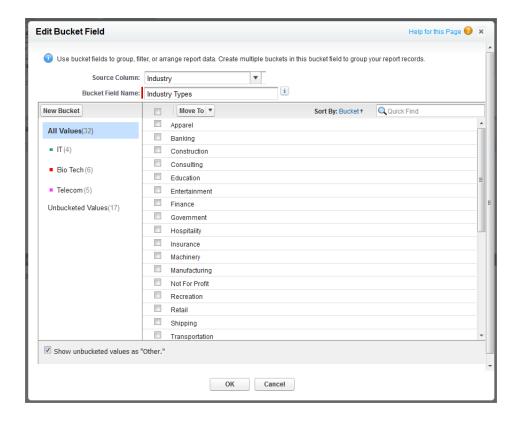
AND

Report Builder

#### Enhanced Folder Sharing

Create and
Customize Reports

AND



SEE ALSO:

Edit a Picklist Bucket Field

Analytics Edit a Text Bucket Field

## Edit a Text Bucket Field

A text bucket helps you sort out values that consist of words or phrases.

Mote: Ti

Note: The following text types can't be bucketed.

- Text area
- Text area—long
- Text area—rich
- Text area—encrypted
- URL
- Date
- Date/Time

In the Edit Bucket Field overlay for a text field:

- 1. For Source Column, select the field you want to bucket.
- 2. Enter a bucket field name. This appears as the column name in the report.

  Since a bucket field is intended to have multiple buckets within it, a good name for a bucket field describes the scope of the buckets. For example, a bucket field named "Region" could have "East," "West," and "Central" buckets.
- **3.** To create a bucket, click **New Bucket** and enter a bucket name. Create multiple buckets to group your report records.
- **4.** To find a particular value in the list of values, type all or part of its name in the **Search for values...** box and click **Search**, or leave the box empty and click **Search**.

The search returns up to 200 values.

**5.** Select values and drag them into a bucket. Alternatively, select values, click **Move To**, and select a bucket or enter a new bucket name.

While you're bucketing values, use these functions as needed:

- Use Enter Values to enter the exact name of a value you want to bucket, or to bucket values that may appear in your report later.
- To show the values for a particular bucket, click the bucket name.
- To remove values from a bucket, select the values, select **Move To**, and select a bucket or enter a new bucket name.
- **6.** To move all unbucketed values into a bucket named "Other," enable Show unbucketed values as "Other". If this is disabled, unbucketed values appear in the bucket column with the value name.
- 7. Click OK.

In a report, text bucket columns are sorted in alphanumeric order.

#### SEE ALSO:

**Enter Values for Text Buckets** 

Text Bucketing Example: Strategic Accounts

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

**AND** 

Report Builder

#### Enhanced Folder Sharing

Create and Customize Reports

AND

Analytics Enter Values for Text Buckets

## **Enter Values for Text Buckets**

A text bucket field needs a descriptive name and two or more buckets containing text strings.

If you know the exact value you want to bucket, you can use the Enter Values function to quickly bucket it without searching. This is useful if your report has a large number (such as millions) of values and searching for a value is slow. You can also use this method to enter and bucket values that may appear in your report later.

In the Edit Bucket Field overlay for a text field:

- 1. Click Enter Values.
- **2.** Select the bucket where you want to move the values. If you select **New Bucket**, enter a name for the bucket.
- **3.** Type one or more values in the box. Enter multiple values on separate lines.
- 4. Click Move.

SEE ALSO:

Edit a Text Bucket Field

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and Customize Reports

AND

Report Builder

## Enhanced Folder Sharing

Create and Customize Reports

AND

## **Text Bucketing Example: Strategic Accounts**

Use a text bucket to sort accounts into general categories that you can act on.

- 1. Create or edit a standard account report, making sure at least a few records appear in the report.
- 2. In the Fields pane of the report builder, double-click **Add Bucket Field** or drag it into the report.
- 3. For Source Column, select Account Name.
- 4. For Bucket Field Name, enter Strategic.
- 5. Click **New Bucket** and name the bucket IBM.
- **6.** Click **New Bucket** and name the bucket *Dell*.
- 7. Click **New Bucket** and name the bucket *HP*.
- **8.** To show the available values, leave the **Search for values...** box empty and click **Search**.
- **9.** Select values and drag them into the appropriate buckets.
- 10. Enable Show unbucketed values as "Other".
- **11.** Click **OK**.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To create, edit, and delete reports:

**Legacy Folder Sharing** 

Create and Customize Reports

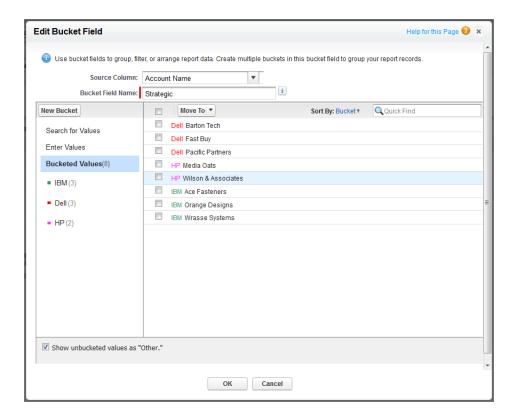
AND

Report Builder

## Enhanced Folder Sharing

Create and Customize Reports

AND



SEE ALSO:

Edit a Text Bucket Field

## Use a Summary Function in a Custom Summary Formula

Summary functions let you use grouping values in custom summary formulas for summary, matrix, and joined reports. There are two summary functions: PARENTGROUPVAL and PREVGROUPVAL.

- 1. Double-click Add Formula in the Fields pane.
- 2. In the Custom Summary Formula dialog, under Functions, select Summary.
- 3. Select PARENTGROUPVAL or PREVGROUPVAL.
- **4.** Select the grouping level and click **Insert**.
- **5.** Define the formula, including where to display the formula.
- 6. Click OK.

#### SEE ALSO:

Evaluate Report Data with Summary Formulas PARENTGROUPVAL and PREVGROUPVAL

## PARENTGROUPVAL and PREVGROUPVAL

Use PARENTGROUPVAL to calculate values relative to a parent grouping. Use PREVGROUPVAL to calculate values relative to a peer grouping.

## **PARENTGROUPVAL**

Use this function to calculate values relative to a parent grouping.

## **Description:** This function returns the value of a specified parent grouping. A "parent"

grouping is any level above the one containing the formula. You can only use this function in custom summary formulas for reports.

Use:

 $\textbf{Summary and Joined:} \ \mathtt{PARENTGROUPVAL} \ (\mathtt{summary\_field},$ 

grouping level)

Matrix: PARENTGROUPVAL(summary\_field,

parent\_row\_grouping, parent\_column\_grouping)

Where summary\_field is the summarized field value, grouping\_level is the parent level for summary reports, and parent\_row\_level and parent\_column\_level are the

parent levels for matrix reports.

## Example:

TOTAL\_PRICE:SUM/PARENTGROUPVAL(TOTAL\_PRICE:SUM, GRAND SUMMARY)

This formula calculates, for each product, its relative size compared to the grand total. In this example, the report is a summary of opportunities and their products, grouped by Product Name.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To create, edit, and delete reports:

Legacy Folder Sharing

Create and
Customize Reports

AND

Report Builder

#### Enhanced Folder Sharing

Create and Customize Reports

AND

## **PREVGROUPVAL**

Use this function to calculate values relative to a peer grouping. If there's no previous grouping, the function returns a null value.

| Description: | This function returns the value of a specified previous grouping. A "previous" grouping is one that comes before the current grouping in the report. Choose the grouping level and increment. The increment is the number of columns or rows before the current summary. The default is 1; the maximum is 12. You can only use this function in custom summary formulas for reports. |
|--------------|--|
| Use:         | <pre>PREVGROUPVAL(summary_field, grouping_level [, increment])</pre>   |
|              | Where summary_field is the name of the grouped row or column, grouping_level is the summary level, and increment is the number of rows or columns previous.  |
| Example:     | AMOUNT:SUM - PREVGROUPVAL (AMOUNT:SUM, CLOSE_DATE)   |
|              | This formula calculates, for each month, the difference in amount from the previous month shown in the report. In this example, the report is an opportunity matrix with columns grouped by Close Date and rows by Stage.  |

## **Example: Three Week Moving Average**

To calculate a three-week moving average of opportunity amounts:

```
(OppProductTrends_c.Amount_c:SUM+ PREVGROUPVAL(OppProductTrends_c.Amount_c:SUM, OppProductTrends_c.as_of_date_c) + PREVGROUPVAL(OppProductTrends_c.Amount_c:SUM, OppProductTrends_c.as_of_date_c,2))/3
```

#### SEE ALSO:

Add a Summary Formula Column to a Report Evaluate Report Data with Summary Formulas Build a Custom Summary Formula for a Joined Report Analytics Run and Read a Report

## Run and Read a Report

Click on a report's name to run it. After running a report, there are a series of tools you can use to help you read the information.

From the report run page in Lightning Experience, you can:

- Show or hide a report chart.
- Edit report filters (except for locked filters).
- Launch the report builder to edit the report.
- Refresh the report.
- Subscribe to the report.
- Export the report.
- Delete the report.

From the report run page in Salesforce Classic, you can:

- Display a Chatter feed of updates and posts about the report.
- View Report Generation Status.
- Choose hierarchy options.
- Change top-level groupings using the Summarize information by drop-down.
- Change Time Frame and View options.
- Click **Run Report** to immediately run or schedule the report.
- Click **Show Details** to view all data or **Hide Details** to show only summary information.
- Click **Customize** to open the report in report builder.
- Print or export the report.
- Click **Subscribe** to set up report notifications, which notify you whenever certain metrics in the report meet your conditions.
- Click Edit next to the chart to change its properties, or click Large, Medium, or Small to change
  its size.
- Sort report results.
- Edit or clear applied filter criteria.
  - For summary and matrix reports, filter selected rows by a particular field. Select the rows you want to view, choose a field to group by, then click **Drill Down**. For example, if you created an opportunity report that displays deals by industry, you can select the industries that are doing well and group by Product Name to see which products are selling in that industry. Click **Clear** to remove the drill-down filter.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To run reports:

Legacy Folder Sharing
Run Reports

Enhanced Folder Sharing Run Reports

Kon Kepon

To view reports:

Legacy Folder Sharing
View All Data

Enhanced Folder Sharing

View Reports in Public Folders

## **Dashboards**

Dashboards help you visually understand changing business conditions so you can make decisions based on the real-time data you have gathered with reports. Use dashboards to help users identify trends, sort out quantities, and measure the impact of their activities. Before building, reading, and sharing dashboards, review these dashboard basics.

Watch a Demo: An Overview of Dashboards (Salesforce Classic)

Note: Dashboards in Group Edition organizations are view-only.

Note: Dashboads do not support localization.

As you prepare to curate your Salesforce data with dashboards, keep these tips in mind:

- Reports provide all the data shown in a dashboard. Dashboards can show data from more than one report.
- When refreshing a dashboard, all the data-providing reports must run. If the reports take a long time to run, then the dashboard does too.
- Dashboards are shared via folders. Whomever has permission to the folder your dashboard is saved in also has access to your dashboard. Ensure that you save your dashboard in an appropriate folder.

Before creating or reading a dashboard, familiarize yourself with these features and concepts.

#### **Dashboard Editor**

The Dashboard Editor is a visual, drag-and-drop tool which you use to create dashboards and edit existing ones. The Dashboard Editor is where you add, edit, and arrange dashboard components.

To launch the Dashboard Editor, click **New Dashboard**.

#### Components

Dashboards are made up of components. Each component contains a chart or metric which shows data from one report. Different components can show data from different reports.

#### Running User (Viewing As)

In Salesforce, different users have different permissions to access data. A dashboard only displays data that the dashboard's running user can access.

For example, say you're viewing a dashboard describing Leads. Emily is a sales operations manager who sees all Leads, and Marcus is a direct sales specialist who sees only the leads he owns. If Emily is the dashboard's running user, then the dashboard shows data about all the Leads in Salesforce. If Marcus is the running user, then the dashboard only shows data about Leads that Marcus owns.

#### IN THIS SECTION:

#### 1. Build a Dashboard

When you're ready to share Salesforce data with colleagues, build a dashboard. Dashboards let you curate data from reports using charts, tables, and metrics. If your colleagues need more information, then they're able to view your dashboard's data-supplying reports.

#### 2. Filter a Dashboard

Dashboard filters make it easy to provide different combinations of data from a single dashboard. You don't need separate dashboards for different sets of users — give each group a filter that makes sense for them. When you use a filter on a dashboard, the filtered view is shown again the next time you visit the dashboard.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

#### 3. Dynamic Dashboards: Choose Who People View a Dashboard As

Say that your sales people can only view their own opportunities, but you'd like to review all opportunities closed in the last quarter. Create a dashboard and let people view the dashboard as you (or anyone else who can see all opportunities). When your sales people open the dashboard, they see info about all opportunities instead of only their opportunities. (Their data access in Salesforce remains unchanged. They can only see more data in your dashboard.)

#### 4. Subscribe to or Schedule Dashboards

Set up automatic dashboard refreshes and receive refreshed dashboard results by email on a schedule that you set. If you start your week by reviewing your Sales Overview dashboard, expedite your morning by subscribing to the dashboard. After subscribing, you can have it automatically refreshed and in your email inbox each Monday morning at 8:00 AM.

#### 5. Link from Dashboard Components in Lightning Experience

A sales overview dashboard is a great way for teams to collaborate on opportunities because it provides a complete picture of your pipeline. Dashboard components already link to source reports, so you can get more details, but what if you're ready to take action?

#### 6. Work with Dashboards

Click on a dashboard's name to run it. Dashboard charts are interactive, so be sure to hover and click on them to get more info! From refreshing dashboard data to sharing dashboard components, there are lots of ways to use dashboards to keep yourself and your team informed and collaborating.

#### 7. Organize Dashboards

Keep your dashboards at your fingertips by embedding them around Salesforce, printing them, or deleting dashboards that you don't need anymore.

#### 8. Dashboard Limits, Limitations, and Allocations

As you build dashboards of your data, be aware of these limits, limitations, and allocations.

### 9. Why Doesn't My Dashboard Display the Data I Expect?

If you're not seeing data you expect, refresh for latest data, check that you have the right running user, and verify your dashboard data sources.

#### 10. Why Can't I Use a Report in a Dashboard Component?

Most reports are available for use as data sources in dashboard components, but there are some reports which are unsupported. You can usually edit unsupported reports to make them compatible with dashboard components. Read on to learn about when and why reports aren't supported, and how to make 'em work.

## Build a Dashboard

When you're ready to share Salesforce data with colleagues, build a dashboard. Dashboards let you curate data from reports using charts, tables, and metrics. If your colleagues need more information, then they're able to view your dashboard's data-supplying reports.

#### IN THIS SECTION:

1. Build a Lightning Experience Dashboard

Build a Lightning Experience dashboard to provide a graphical view of the Salesforce data in reports.

2. Build a Salesforce Classic Dashboard

Build a dashboard to provide a graphical view of the data in your reports.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **USER PERMISSIONS**

To build a dashboard

Legacy Folder Sharing
Drag-and-Drop
Dashboard Builder

Enhanced Folder Sharing

Drag-and-Drop Dashboard Builder

## Build a Lightning Experience Dashboard

## **USER PERMISSIONS**

To create dashboards:

**Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Run Reports AND Create and Customize Dashboards

To edit and delete dashboards you created:

**Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Run Reports AND Create and Customize Dashboards

To edit and delete dashboards you created in public folders:

**Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

## **EDITIONS**

Available in: Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and

Folder Sharing and Enhanced Folder Sharing

|  | Enhanced Folder Sharing Edit My Dashboards                                    |  |
|--|---|--|
| To edit and delete dashboards you didn't create in public folders: | <b>Legacy Folder Sharing</b> Run Reports, Manage Dashboards AND View All Data |  |
|  | <b>Enhanced Folder Sharing</b> Manage Dashboards in Public Folders            |  |
| To create, edit, and delete dynamic dashboards:                    | <b>Legacy Folder Sharing</b> Manage Dynamic Dashboards                        |  |
|  | <b>Enhanced Folder Sharing</b> Manage Dynamic Dashboards                      |  |

Build a Lightning Experience dashboard to provide a graphical view of the Salesforce data in reports.

Dashboards are built with source reports, filters, and components.

Source reports are reports that provide data for components. Each component has one source report. Different components can have different source reports. The fields available for dashboard filters are the fields available in the objects that source reports are based on. Create source reports in the Report Builder.

Filters let dashboard readers scope the data they see in the dashboard to a particular view.

Components are the visual "blocks" of a dashboard. Each component is either a chart, gauge, metric, or table.



This topic is about creating dashboards for reports in Lightning Experience. For information on creating dashboards in Salesforce Classic or Analytics, review these articles:

- Build a Salesforce Classic Dashboard
- Build Analytics Dashboards
- Tip: You can clone a dashboard to quickly create a dashboard with the same properties and components as the one you're viewing. Click **Save As** (or **Clone**), modify the dashboard settings, and save.
- 1. If necessary, create the source reports containing the data you want to display.
  - (1) Important: Be sure to store these reports in folders that intended dashboard viewers can access.
- 2. From the Dashboards tab, click **New Dashboard**.

3. Name the dashboard.

Optionally, provide a short description. Then, place the dashboard in a folder. Private Dashboards is the default folder.

- **4.** To add a component to the dashboard, click **+ Component**.
  - a. Choose a source report for the component, then click **Select**.
  - **b.** Customize how the component displays data, then click **Add**.
  - **c.** Arrange and resize the component as necessary.
  - **d.** To edit an existing component, click the pencil icon ( ). To remove a component, click the X icon ( x ).
- **5.** To add a filter to the dashboard, click **+ Filter**.
  - **a.** From the Field drop-down, select a field to filter on. The drop-down shows fields that can be used to filter all the dashboard's components. If there are equivalent fields for your selection, hover over the info icon ( 1) to see them.
  - **b.** Give the filter a Display Name to identify it. If the filter has many equivalent fields, we consider using a name that works for all components.
  - c. Assign values to the filter by clicking Add Filter Value.
- **6.** To specify who people view the dashboard as, click the gear icon ( ) to open the Properties menu.
  - a. Under Name, optionally rename the dashboard.
  - **b.** Under Description, optionally describe the dashboard.
  - **c.** Under Folder, optionally move the dashboard into another folder. To switch folders, first click the X icon ( x ), then select another folder.
  - **d.** Under View Dashboard As, choose who people view the dashboard (and all source reports) as. People could see more or less data than they normally see elsewhere in Salesforce. Be careful not to reveal sensitive information to too broad an audience.
    - **Me** People view the dashboard as you.
    - **Another person** People view the dashboard as whomever you choose. You are the default person. To choose someone else, click the X icon ( × ).
    - **The dashboard viewer** People see data as themselves, according to their own access to data. These types of dashboards are often called *dynamic dashboards*.

Your organization can have up to 5 dynamic dashboards for Enterprise Edition, 10 for Unlimited and Performance Edition, and 3 for Developer Edition. Dynamic dashboards aren't available in other editions. Additional dynamic dashboards may be available for purchase.

Take note of these dynamic dashboard limitations:

- Dynamic dashboards don't support following components.
- You can't save dynamic dashboards in private folders.
- You can't schedule refreshes for dynamic dashboards. They must be refreshed manually.
- Let dashboard viewers choose whom they view the dashboard as Optionally, select Let dashboard viewers choose whom they view the dashboard as to enable a reader with appropriate user permissions to choose who they view the dashboard as. With the "View My Team's Dashboards" user permission, the reader can view the dashboard as themself or as anyone beneath them in the role hierarchy. With the "View All Data" user permission, the reader can view the dashboard as anyone.
- e. Click Save.

7. To customize dashboard theme or color palette, open the Properties menu by clicking the gear icon (\*).

Customize colors in your dashboard by choosing a light or dark theme and one of 14 color palettes. Themes and color palettes help you organize and curate data in your dashboard. For example, highlight a set of summary metrics by giving them a dark theme and setting them against a light-themed dashboard. This feature is new in Lightning Experience.

- **a.** From Dashboard Theme, choose **Light** or **Dark** to set the theme for the entire dashboard. To set a single component's theme, edit the component by clicking .
- **b.** From Dashboard Palette, choose one of 14 color palettes. **Wildflowers** is the default color palette. If you need an accessible color palette, choose **Mineral**.
- c. Click Save.

#### **8.** Click **Save**, then click **Done**.

Your dashboard is done. Review and admire your handiwork!

#### IN THIS SECTION:

#### Edit and Customize Lightning Experience Dashboard Components

Get your Lightning Experience dashboard components to show exactly what you want.

#### Color Dashboard Data with Themes and Palettes

Customize colors in your dashboard by choosing a light or dark theme and one of 14 color palettes. Themes and color palettes help you organize and curate data in your dashboard. For example, highlight a set of summary metrics by giving them a dark theme and setting them against a light-themed dashboard.

### Add a Report to a Dashboard from the Report

Reading a report that you'd like to add to a dashboard? Go from report to dashboard with only a few clicks!

#### Use Source Report Charts in Dashboard Components

You've already charted data just the way you like in a report. Instead of recreating the chart from scratch, surface it in a dashboard component.

#### Group and Measure Data in Lightning Tables

Lightning tables are the best way to display record-level details in dashboards. Now that you can group records, they're even more useful!

#### Edit Dashboards with Keyboard Shortcuts in Lightning Experience

From the Dashboard tab, you can create, edit, or delete a dashboard using nothing but your keyboard. Use keystrokes to edit dashboards quickly and easily in Lightning Experience.

## Edit and Customize Lightning Experience Dashboard Components

## **USER PERMISSIONS**

To create dashboards:

## **Legacy Folder Sharing**

Run Reports AND Manage Dashboards

#### **Enhanced Folder Sharing**

Run Reports AND Create and Customize Dashboards

To edit and delete dashboards you created:

#### **Legacy Folder Sharing**

Run Reports AND Manage Dashboards

#### **Enhanced Folder Sharing**

Run Reports AND Create and Customize Dashboards

To edit and delete dashboards you created in public folders:

## **Legacy Folder Sharing**

Run Reports AND Manage Dashboards

## Enhanced Folder Sharing

Edit My Dashboards

To edit and delete dashboards you didn't create in public folders:

#### **Legacy Folder Sharing**

Run Reports, Manage Dashboards AND View All Data

#### **Enhanced Folder Sharing**

Manage Dashboards in Public Folders

To create, edit, and delete dynamic dashboards:

#### **Legacy Folder Sharing**

Manage Dynamic Dashboards

#### **Enhanced Folder Sharing**

Manage Dynamic Dashboards

Get your Lightning Experience dashboard components to show exactly what you want.

Each component has a series of properties that help you customize the component until it shows exactly the data that you want. Refer to this table for help customizing each component's properties, and for ideas about when to use each type of component:

- 1. Add a new dashboard component by clicking + Component, or edit an existing one by clicking the pencil icon ( ) on the component.
- 2. Set dashboard component properties.
- 3. If adding a new component, click **Add**. Or, if editing an existing component, click **Update**.
- 4. Click Save.

For help setting dashboard component properties, refer to this table.

## **EDITIONS**

Available in: Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

#### Component

#### **Description**

#### **Bar Carts**





#### Use

A bar chart shows values as horizontal lengths, so this format can be good for comparing distance or time. Use a bar chart when you have a summary report with a single grouping, or you only want to display one grouping.

For example, to see the amount in each sales stage in a report, select Sum of Amount as the X-axis and Stage as the Y-axis. The chart displays 1 bar for each stage, with the length proportional to the total opportunity amount.

- **Use chart settings from report** Display the source report's chart. To customize the chart, either deselect **Use chart settings from report** or edit the report chart.
- **Y-Axis** and **X-Axis** Choose a group (horizontal bar charts) or a measure (vertical bar chart) to display on each axis. If applicable, click + Group or + Measure to chart more groups or measures.
- **Display Units** Choose how to display values. Shortened Number automatically chooses a unit appropriate for your data and abbreviates it. Shorten numbers to display approximations that take up less space (for example, 1,876 becomes 1.9k), or view the full number for to-the-digit accuracy. Whole number displays the actual values. Other options are Hundreds, Thousands, Millions, Billions, and Trillions. Choose what makes most sense for your data.
- **Show Values** Specify whether chart segments display values, or not.
- **Show Chatter Photos** (Horizontal bar charts only) Choose whether to display Chatter photos, or not. Table must be grouped by a user or group name field, such as Opportunity Owner.
- **Sort Rows By** Choose how to sort groups displayed in the bar chart.
- **Custom Link** Link from a dashboard component to a Salesforce Record or another website. For more information, see Link a Dashboard Component to a Website or Salesforce Record in Salesforce help.
- **Max Values Displayed** Specify how many groups display in the bar chart.
- **Title** Give the chart a title.
- **Subtitle** Give the chart a subtitle.

#### Component

#### **Description**

- **Footer** Give the chart a footer.
- Component Theme Choose a Light or a Dark theme.
   Customize chart colors from the dashboard properties menu. Individual components support unique themes, but colors are only customizable from the dashboard properties menu.

#### **Stacked Bar Charts**





#### Use

Use a stacked bar chart when you have multiple groupings and are interested in the proportions between values in each grouping and each grouping's total.

For example, compare the status of leads by campaign, and also to compare the totals for each status. Set record count as the X-axis, status as the Y-axis, and campaign as the Stack By value. The chart displays a single bar for each status, broken down by campaign, with each campaign shown in a different color.

- Use chart settings from report Display the source report's chart. To customize the chart, either deselect
   Use chart settings from report or edit the report chart.
- Y-Axis and X-Axis— Choose a group (horizontal bar charts) or a measure (vertical bar chart) to display on each axis. If applicable, click + Group or + Measure to chart more groups or measures.
- **Stack By** Choose which group to stack by.
- **Display Units** Choose how to display values. Shortened Number automatically chooses a unit appropriate for your data and abbreviates it. Shorten numbers to display approximations that take up less space (for example, 1,876 becomes 1.9k), or view the full number for to-the-digit accuracy. Whole number displays the actual values. Other options are Hundreds, Thousands, Millions, Billions, and Trillions. Choose what makes most sense for your data.
- **Stack to 100%** Specify whether to stack the bar chart to 100%, or not.
  - Stack to 100% when you have multiple groupings and are interested in the proportions between values in each grouping and each grouping's total.
- Sort Rows By Choose how to sort groups displayed in the bar chart.

#### Component Description

 Custom Link – Link from a dashboard component to a Salesforce Record or another website. For more information, see Link a Dashboard Component to a Website or Salesforce Record in Salesforce help.

- Max Values Displayed Specify how many groups display in the bar chart.
- **Title** Give the chart a title.
- **Subtitle** Give the chart a subtitle.
- Footer Give the chart a footer.
- Component Theme Choose a Light or a Dark theme.
   Customize chart colors from the dashboard properties menu. Individual components support unique themes, but colors are only customizable from the dashboard properties menu.

#### Line Charts



#### Use

Line charts are good for showing changes in the value of an item over a series of points in time, such as week to week. Use a line chart when you have one important grouping representing an ordered set of data and one value to show.

Line charts are useful for showing data over time. For example, to see the numbers of leads created each month in a report, set record count as the Y-axis and created month for the X-axis. The chart displays a line connecting the record count totals for each month. Salesforce does not plot missing (null) values.

### **Properties**

- Use chart settings from report Display the source report's chart. To customize the chart, either deselect Use chart settings from report or edit the report chart.
- X-Axis Choose a group to display on the x-axis. If applicable, click + Group to chart another group.
- Y-Axis Choose a measure to display on the y-axis. If applicable, click + Measure to chart another measure.
- **Cumulative** Specify whether the line chart is cumulative, or not.

Use a cumulative line chart when you have one important grouping representing an ordered set of data and one value to show, summed over time.

For example, see the total number of closed opportunities by day for each of the last three months. Set amount as the Y-axis, closing day as the X-axis, and closing month as the Group value. The

**Component** Description

chart displays a line for each month, with the line's height representing the cumulative number of closed opportunities up to and including that day.

- **Display Units** Choose how to display values. Shortened Number automatically chooses a unit appropriate for your data and abbreviates it. Shorten numbers to display approximations that take up less space (for example, 1,876 becomes 1.9k), or view the full number for to-the-digit accuracy. Whole number displays the actual values. Other options are Hundreds, Thousands, Millions, Billions, and Trillions. Choose what makes most sense for your data.
- Show Values Specify whether points on the line display values, or not.
- **Sort Rows By** Choose how to sort groups displayed in the chart.
- Custom Link Link from a dashboard component to a Salesforce Record or another website. For more information, see Link a Dashboard Component to a Website or Salesforce Record in Salesforce help.
- Max Values Displayed Specify how many groups display in the line chart.
- **Title** Give the chart a title.
- **Subtitle** Give the chart a subtitle.
- **Footer** Give the chart a footer.
- Component Theme Choose a Light or a Dark theme.
   Customize chart colors from the dashboard properties menu. Individual components support unique themes, but colors are only customizable from the dashboard properties menu.

Donut Charts Use



Use a donut chart when you have multiple groupings and want to show both the proportion of a single value for each grouping against the total, and the total amount itself.

For example, see the breakdown of your case queue by case status in a report, and the total number of cases. Set record count for Value and status for Sliced By. The chart displays a donut made up of wedges, each wedge representing a case status. Wedge size is proportional to the numbers of cases. The total number of cases for all statuses is shown in the middle.

Component Description

- Use chart settings from report Display the source report's chart. To customize the chart, either deselect Use chart settings from report or edit the report chart.
- **Value** Choose a measure to display on the donut chart.
- Sliced By Choose a group to slice the donut by.
- Display Units Choose how to display values. Shortened Number automatically chooses a unit appropriate for your data and abbreviates it. Shorten numbers to display approximations that take up less space (for example, 1,876 becomes 1.9k), or view the full number for to-the-digit accuracy. Whole number displays the actual values. Other options are Hundreds, Thousands, Millions, Billions, and Trillions. Choose what makes most sense for your data.
- Show Values Show values on each donut group (slice).
   Each value is representative of a summary value, like average or record count, for the group.
- **Show Percentages** Show percentages on each donut group (slice).
- Combine Small Groups into "Others" Show each group (slice) that represents 3% or less of the total as a new group called "Others".
- **Show Total** Show a total in the center of the donut chart.
- **Label Groups** Specify whether to label sliced wedges with values, percentages, or no labels.
- **Sort Rows By** Choose how to sort groups displayed in the chart.
- Custom Link Link from a dashboard component to a Salesforce Record or another website. For more information, see Link a Dashboard Component to a Website or Salesforce Record in Salesforce help.
- **Max Values Displayed** Specify how many groups display in the donut chart.
- **Title** Give the chart a title.
- Subtitle Give the chart a subtitle.
- **Footer** Give the chart a footer.
- Component Theme Choose a Light or a Dark theme.
   Customize chart colors from the dashboard properties menu. Individual components support unique themes, but colors are only customizable from the dashboard properties menu.

#### Component

#### **Description**

#### **Funnel Charts**



#### Use

Use a funnel chart when you have multiple groupings in an ordered set and want to show the proportions among them.

For example, to see the number of opportunities in each stage in a report, set amount for Value and stage for Color By. Since the Opportunity: Stage field is an ordered picklist, the stages are sorted in the same order as the picklist. Funnel charts are useful for showing the flow of opportunities through the stages; a substantially larger segment can indicate a bottle-neck at that stage.

- Use chart settings from report Display the source report's chart. To customize the chart, either deselect
   Use chart settings from report or edit the report chart.
- **Value** Choose a measure to display on the funnel chart.
- **Display Units** Choose how to display values. Shortened Number automatically chooses a unit appropriate for your data and abbreviates it. Shorten numbers to display approximations that take up less space (for example, 1,876 becomes 1.9k), or view the full number for to-the-digit accuracy. Whole number displays the actual values. Other options are Hundreds, Thousands, Millions, Billions, and Trillions. Choose what makes most sense for your data.
- Color By Choose a group to display in the funnel chart.
- **Label Groups** Specify whether to label sliced wedges with values, percentages, or no labels.
- Show Values Specify whether chart segments display values, or not.
- Show Percentages Specify whether chart segments display percentages, or not.
- **Sort Rows By** Choose how to sort groups displayed in the chart.
- Custom Link Link from a dashboard component to a Salesforce Record or another website. For more information, see Link a Dashboard Component to a Website or Salesforce Record in Salesforce help.
- **Max Values Displayed** Specify how many groups display in the funnel chart.
- **Title** Give the chart a title.
- **Subtitle** Give the chart a subtitle.
- **Footer** Give the chart a footer.

#### Component Description

Component Theme – Choose a Light or a Dark theme.
 Customize chart colors from the dashboard properties menu. Individual components support unique themes, but colors are only customizable from the dashboard properties menu.

#### **Scatter Charts**



#### Use

Use scatter charts to show meaningful information using one or two groups of report data plus measures.

For example, see how stage duration correlates with the number of activities for opportunities. Group your report by Opportunity Name. Then set X-Axis on the chart to Record Count and Y-Axis to Stage Duration. The chart shows a dot for each opportunity. At a glance, you can tell if the stage duration is shorter for opportunities that have more activities.

- Use chart settings from report Display the source report's chart. To customize the chart, either deselect
   Use chart settings from report or edit the report chart.
- **X-Axis** Choose a measure for the x-axis.
- **Y-Axis** Choose a measure for the y-axis.
- **Detail** Choose a group to plot on the scatter chart.
- **Display Units** Choose how to display values. Shortened Number automatically chooses a unit appropriate for your data and abbreviates it. Shorten numbers to display approximations that take up less space (for example, 1,876 becomes 1.9k), or view the full number for to-the-digit accuracy. Whole number displays the actual values. Other options are Hundreds, Thousands, Millions, Billions, and Trillions. Choose what makes most sense for your data.
- Add Choose a second group to plot on the scatter chart
- Sort Rows By Choose how to sort groups displayed in the chart.
- Custom Link Link from a dashboard component to a Salesforce Record or another website. For more information, see Link a Dashboard Component to a Website or Salesforce Record in Salesforce help.
- Max Values Displayed Specify how many groups display in the scatter chart.
- **Title** Give the chart a title.

#### Component Description

- Subtitle Give the chart a subtitle.
- Footer Give the chart a footer.
- Component Theme Choose a Light or a Dark theme. Customize chart colors from the dashboard properties menu. Individual components support unique themes, but colors are only customizable from the dashboard properties menu.

## **Gauge Charts**



#### Use

A gauge is used to see how far you are from reaching a goal. It displays a single value, such as closed deals.

For example, use a gauge to see how close you are to meeting your target revenue.

#### **Properties**

- Use chart settings from report Display the source report's chart. To customize the chart, either deselect
   Use chart settings from report or edit the report chart.
- **Measure** Choose a measure for the gauge chart.
- **Display Units** Choose how to display values. Shortened Number automatically chooses a unit appropriate for your data and abbreviates it. Shorten numbers to display approximations that take up less space (for example, 1,876 becomes 1.9k), or view the full number for to-the-digit accuracy. Whole number displays the actual values. Other options are Hundreds, Thousands, Millions, Billions, and Trillions. Choose what makes most sense for your data.
- **Shorten Number** Choose whether to shorten numbers, or not.

Shorten numbers to display approximations that take up less space (for example, 1,876 becomes 1.9k), or view the full number for to-the-digit accuracy.

- **Show Range** Choose whether to show or hide a range.
- Segment Ranges Choose breakpoints and colors for segments on the gauge.
- Custom Link Link from a dashboard component to a Salesforce Record or another website. For more information, see Link a Dashboard Component to a Website or Salesforce Record in Salesforce help.
- **Title** Give the chart a title.
- **Subtitle** Give the chart a subtitle.
- **Footer** Give the chart a footer.

#### Component Description

Component Theme – Choose a Light or a Dark theme.
 Customize chart colors from the dashboard properties menu. Individual components support unique themes, but colors are only customizable from the dashboard properties menu.

#### **Metric Components**



#### Use

Use a metric when you have one key value to display. For example, show the total number of customer support cases filed today.

### **Properties**

- Use chart settings from report Display the source report's chart. To customize the chart, either deselect
   Use chart settings from report or edit the report chart.
- Measure Choose a measure for the metric chart.
- **Display Units** Choose how to display values. Shortened Number automatically chooses a unit appropriate for your data and abbreviates it. Shorten numbers to display approximations that take up less space (for example, 1,876 becomes 1.9k), or view the full number for to-the-digit accuracy. Whole number displays the actual values. Other options are Hundreds, Thousands, Millions, Billions, and Trillions. Choose what makes most sense for your data.
- **Shorten Number** Choose whether to shorten numbers, or not.

Shorten numbers to display approximations that take up less space (for example, 1,876 becomes 1.9k), or view the full number for to-the-digit accuracy.

- **Show Range** Choose whether to show or hide a range.
- Segment Ranges Choose breakpoints and colors for segments on the component.
- Custom Link Link from a dashboard component to a Salesforce Record or another website. For more information, see Link a Dashboard Component to a Website or Salesforce Record in Salesforce help.
- **Title** Give the component a title.
- **Subtitle** Give the component a subtitle.
- **Footer** Give the component a footer.
- Component Theme Choose a Light or a Dark theme.
   Customize chart colors from the dashboard properties menu. Individual components support unique themes,

#### Component

#### **Description**

but colors are only customizable from the dashboard properties menu.

#### **Legacy Table Components**



#### Use

A legacy table component shows columns of data from a custom report in a dashboard. You can use color and scale to help users interpret the report data the legacy table displays.

The default two-column table uses the first grouping and summary field from the chart in the source report. If the report has no chart, default columns are based on the first grouping and summary field in the report.

Two-column legacy tables do not allow null values.

To use a tabular report as the source report, Rows to Display must be set for that report.

#### **Properties**

- Use chart settings from report Display the source report's chart. To customize the chart, either deselect
   Use chart settings from report or edit the report chart.
- Columns The columns from the source report displayed in the table component.
- **Display Units** Choose how to display values. Shortened Number automatically chooses a unit appropriate for your data and abbreviates it. Shorten numbers to display approximations that take up less space (for example, 1,876 becomes 1.9k), or view the full number for to-the-digit accuracy. Whole number displays the actual values. Other options are Hundreds, Thousands, Millions, Billions, and Trillions. Choose what makes most sense for your data.
- **Show Chatter Photos** Choose whether to display Chatter photos, or not.

Display Chatter photos for up to 20 records in a horizontal bar chart component whose source report is grouped by a user or group name field. If there are more than 20 records with photos, record names are shown instead of photos.

- Add Conditional Highlighting Highlight values in the table based on breakpoints and colors set in segment ranges. Click each color to customize it.
- Segment Ranges Choose breakpoints and colors for segments on the gauge. Only available when conditional highlighting is included.

#### Component Description

- Sort Rows By Choose how to sort groups displayed in the chart.
- Max Values Displayed Specify how many groups display in the component.
- **Title** Give the component a title.
- **Subtitle** Give the component a subtitle.
- **Footer** Give the component a footer.
- Component Theme Choose a Light or a Dark theme.
   Customize chart colors from the dashboard properties menu. Individual components support unique themes, but colors are only customizable from the dashboard properties menu.

#### **Lightning Dashboard Table**



#### Use

Show up to 200 records and 10 columns and from any field in a source report's report type. The available fields in a Lightning dashboard table come from the source report's report type, so you can show fields as columns in Lightning dashboard tables that aren't included as columns in the source report.

Lightning tables aren't available in Salesforce Classic. You can't add them from the Classic dashboard builder, nor can you see them when you view a dashboard in Salesforce Classic.

If a dashboard hasn't been refreshed for 7 days, then Lightning dashboard tables display no data. Instead, they prompt dashboard viewers to refresh the dashboard. After refreshing the dashboard the Lightning dashboard table shows data as normal.

#### **Properties**

- Use chart settings from report Display the source report's chart. To customize the chart, either deselect Use chart settings from report or edit the report chart.
- Columns Choose columns from fields in the source report's report type. To add a column, search for it and select it from the Add column... field.

To reorder columns, drag them up or down. The top columns appear on the left-hand side of the table, and the bottom columns appear on the right.

Component Description

Sort Column – Specify a column to sort the table by.
 Then, choose either Ascending, Descending, or nothing depending on how you want to sort the table.

- **Display Units** Choose how to display values. Shortened Number automatically chooses a unit appropriate for your data and abbreviates it. Shorten numbers to display approximations that take up less space (for example, 1,876 becomes 1.9k), or view the full number for to-the-digit accuracy. Whole number displays the actual values. Other options are Hundreds, Thousands, Millions, Billions, and Trillions. Choose what makes most sense for your data.
- Show Chatter Photos Choose whether to display Chatter photos, or not. Table must be grouped by a user or group name field, such as Opportunity Owner.
- Show Total For numeric columns, Display the sum of all rows in the table.
- Add Conditional Highlighting Highlight values in the table based on breakpoints and colors set in segment ranges. Click each color to customize it.
- Max Values Displayed Specify how many groups display in the component.
- **Title** Give the component a title.
- **Subtitle** Give the component a subtitle.
- **Footer** Give the component a footer.
- Component Theme Choose a Light or a Dark theme.
   Customize chart colors from the dashboard properties menu. Individual components support unique themes, but colors are only customizable from the dashboard properties menu.

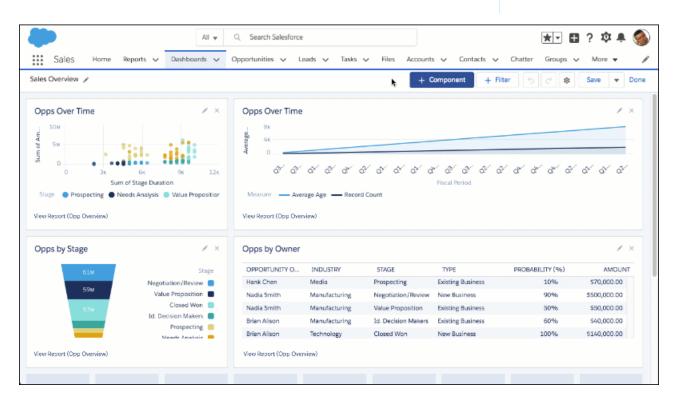
#### Color Dashboard Data with Themes and Palettes

Customize colors in your dashboard by choosing a light or dark theme and one of 14 color palettes. Themes and color palettes help you organize and curate data in your dashboard. For example, highlight a set of summary metrics by giving them a dark theme and setting them against a light-themed dashboard.



To set dashboard color themes and palettes:

 Change Dashboard Colors



- 1. Edit a dashboard.
- 2. Open the properties menu by clicking the gear icon (\*).
- 3. From Dashboard Theme, choose **Light** or **Dark** to set the theme for the entire dashboard.

**4.** From Dashboard Palette, choose one of 14 color palettes. **Wildflowers** is the default color palette. If you need an accessible color palette, choose **Mineral**.

Every component in a dashboard uses the same color palette. Individual components don't support unique color palettes.

#### 5. Click Save.

Your dashboard now features a custom color palette and themes. Review and admire your dashboard's new look!

## Add a Report to a Dashboard from the Report

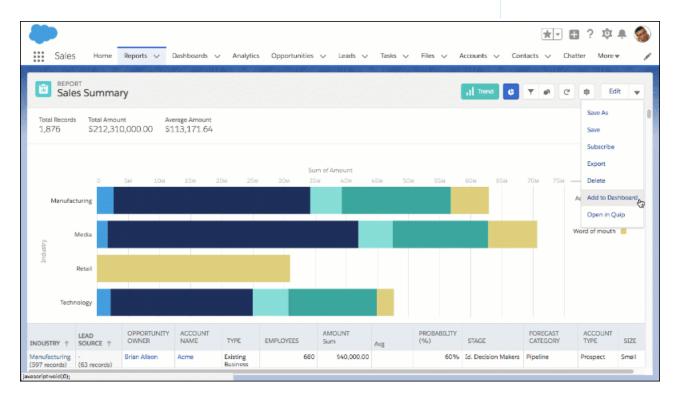
Reading a report that you'd like to add to a dashboard? Go from report to dashboard with only a few clicks!

| User Permissions Needed                 |                                 |  |  |
|---|---------------------------------|--|--|
| To add a report to a dashboard:         | Create and Customize Dashboards |  |  |
| To add a report to a Dynamic Dashboard: | Manage Dynamic Dashboards       |  |  |

Available in: Lightning
Experience

Available in: Professional,
Enterprise, Performance,
Unlimited, and Developer
Editions

Available in: Enhanced
Folder Sharing



- From either the Reports tab or while reading a report, click > Add to Dashboard.
- 2. Choose whether you want to add the report to an existing dashboard (**Add to existing dashboard**), or create a new dashboard from the report (**Add to new dashboard**). If necessary, name, describe, and choose a folder for the new dashboard.

- 3. Click Add.
- **4.** Customize the dashboard component.
- 5. Click Add.
- **6.** Optionally, continue customizing the dashboard.
- 7. Click Save.

There you go. Report to dashboard in record time!

## Use Source Report Charts in Dashboard Components

## USER PERMISSIONS

To create dashboards: **Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Run Reports AND Create and Customize Dashboards

To edit and delete dashboards you created:

**Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Run Reports AND Create and Customize Dashboards

To edit and delete dashboards you created

in public folders:

**Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Edit My Dashboards

To edit and delete dashboards you didn't

create in public folders:

**Legacy Folder Sharing** 

Run Reports, Manage Dashboards AND

View All Data

**Enhanced Folder Sharing** 

Manage Dashboards in Public Folders

To create, edit, and delete dynamic

dashboards:

**Legacy Folder Sharing** 

Manage Dynamic Dashboards

**Enhanced Folder Sharing** 

Manage Dynamic Dashboards

## **EDITIONS**

Available in: Lightning

Experience

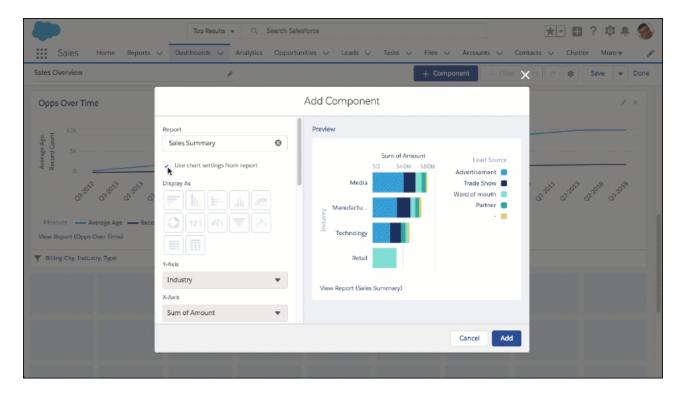
Available in: Professional. Enterprise, Performance, Unlimited, and Developer

**Editions** 

Available in: Enhanced

**Folder Sharing** 

You've already charted data just the way you like in a report. Instead of recreating the chart from scratch, surface it in a dashboard component.



- 1. Create or edit a dashboard.
- 2. Add a new dashboard component by clicking + Component, or edit an existing one by clicking the pencil icon ( ) on the component.
- 3. From the Add Component or Edit Component menu, select **Use chart settings from report**.

The dashboard component displays the source report chart. To customize the chart, either deselect **Use chart settings from report** or edit the report chart.



**Note**: Dashboard charts and report charts have certain differences. For example, report charts display more data points than dashboard charts. Dashboard charts are still subject to dashboard-specific limitations even when using chart settings from a source report.

## Group and Measure Data in Lightning Tables

| USER PERMISSIONS                           |  | EDITIONS   |
|--|--|--|
| To create dashboards:                      | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 | Available in: Lightning<br>Experience  |
|  | <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards | Available in: <b>Professional</b> ,<br><b>Enterprise</b> , <b>Performance</b> ,<br><b>Unlimited</b> , and <b>Developer</b><br>Editions |
| To edit and delete dashboards you created: | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 | Available in: Enhanced Folder Sharing  |
|  | <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards |  |

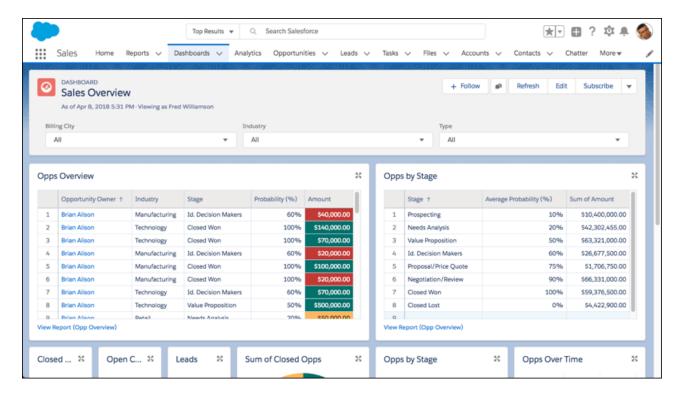
To edit and delete dashboards you created in public folders: **Legacy Folder Sharing** Run Reports AND Manage Dashboards **Enhanced Folder Sharing** Edit My Dashboards To edit and delete dashboards you didn't create in public **Legacy Folder Sharing** folders: Run Reports, Manage Dashboards AND View All Data **Enhanced Folder Sharing** Manage Dashboards in Public Folders To create, edit, and delete dynamic dashboards: **Legacy Folder Sharing** Manage Dynamic Dashboards **Enhanced Folder Sharing** Manage Dynamic Dashboards

Lightning tables are the best way to display record-level details in dashboards. Now that you can group records, they're even more useful!

Ungrouped Lightning tables display detail columns. Detail columns show per-record information about each individual record.

Grouped Lightning tables display measure columns. Opportunities grouped by stage usually don't all have the same owner or account or amount, so instead measure columns display either the sum, average, maximum, or minimum value of the grouped records. As a result, all measure columns are numeric.

For example, as seen in this Sales Overview dashboard, you can use a Lightning table to list details about individual opportunity records. A second Lightning table is grouped by stage and provides a handy reference of key metrics like sum of amount and average probability by stage.



- 1. Create or edit a dashboard.
- 2. Add a new Lightning table by clicking + Component and choosing , or edit an existing one by clicking the pencil icon ( / ) on the table.
- 3. From **Add group...**, select a field to group by.

  You can group the table by any field from the source report type, so you can group by a field even if it isn't part of the report.
- **4.** To add a measure column, choose a field from **Add measure column...**.

  Add up to 10 measure columns. Remember, you can only measure numeric fields, so date, text, picklist, and Boolean fields aren't available.
  - Note: The default measure column is record count. You can't remove record count, but after adding another measure column, you can hide it by clicking the eye icon ().
- **5.** After adding a measure column, click it and choose up to four measures: **Sum**, **Average**, **Max**, or **Min**. The Lightning table displays grouped and measured data instead of detail rows. To display detail rows again, ungroup the table by clicking **X** or  $\hat{\mathbf{m}}$ .

## Edit Dashboards with Keyboard Shortcuts in Lightning Experience

## **USER PERMISSIONS**

To create dashboards:

**Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Run Reports AND Create and Customize

Dashboards

To edit and delete dashboards you created:

**Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Run Reports AND Create and Customize

Dashboards

To edit and delete dashboards you created in public folders:

**Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Edit My Dashboards

To edit and delete dashboards you didn't create in public folders:

**Legacy Folder Sharing** 

Run Reports, Manage Dashboards AND

View All Data

**Enhanced Folder Sharing** 

Manage Dashboards in Public Folders

To create, edit, and delete dynamic dashboards:

quickly and easily in Lightning Experience.

**Legacy Folder Sharing** 

Manage Dynamic Dashboards

**Enhanced Folder Sharing** 

Manage Dynamic Dashboards

From the Dashboard tab, you can create, edit, or delete a dashboard using nothing but your keyboard. Use keystrokes to edit dashboards

Use these handy keyboard shortcuts while building or editing a dashboard.

| Keyboard Shortcut | Description  |
|-------------------|--|
| Tab               | Focus on next item in the dashboard                        |
| Shift+Tab         | Focus on previous item in the dashboard                    |
| Spacebar          | Select a component to move or a component corner to resize |
| Arrow keys        | Move or resize a widget                                    |
| Enter             | Click a button   |

## **EDITIONS**

Available in: Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

| Keyboard Shortcut | Description                             |
|-------------------|---|
| Ctrl+Z            | Undo                                    |
| Ctrl+Y            | Redo                                    |
| Ctrl+S            | Save                                    |
| Ctrl+N            | Add component                           |
| Esc               | Cancel pending component move or resize |

As you tab through dashboard components, notice that the option to have a screen reader read each chart's dataset appears, **Read Chart Dataset (Screen Reader)**.

For more information about using screen readers with Salesforce, see **Recommendations for Salesforce Accessibility** in the Salesforce help.

### Build a Salesforce Classic Dashboard

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To create dashboards: Legacy Folder Sharing

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Run Reports AND Create and Customize Dashboards

To edit and delete dashboards you created:

**Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Run Reports AND Create and Customize Dashboards

To edit and delete dashboards you created in public folders:

**Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Edit My Dashboards

To edit and delete dashboards you didn't create in public folders:

**Legacy Folder Sharing** 

Run Reports, Manage Dashboards AND

View All Data

**Enhanced Folder Sharing** 

Manage Dashboards in Public Folders

To create, edit, and delete dynamic dashboards:

**Legacy Folder Sharing** 

Manage Dynamic Dashboards

## EDITIONS

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

#### **Enhanced Folder Sharing**

Manage Dynamic Dashboards

Build a dashboard to provide a graphical view of the data in your reports.

This topic is about creating dashboards from reports in Salesforce Classic. For information on creating dashboards in Salesforce Classic or Analytics, review these articles:

- Build a Lightning Experience Dashboard
- Build Analytics Dashboards
- Tip: You can clone a dashboard to quickly create a dashboard with the same properties and components as the one you're viewing. Click **Clone**, modify the dashboard settings, and save.
- 1. Create the custom reports containing the data you want to display.
  - [] Important: Be sure to store these reports in folders that your intended dashboard viewers can access.
- 2. Click the Dashboards tab.
- 3. Click Go To Dashboard List.
- 4. Click New Dashboard.

To modify an existing dashboard, click its name from the list.

**5.** Customize your dashboard and click **Save**.

### IN THIS SECTION:

#### Work with Salesforce Classic Dashboards

A *dashboard* shows data from source reports as visual components, which can be charts, gauges, tables, metrics, or Visualforce pages. The components provide a snapshot of key metrics and performance indicators for your organization.

#### Edit Dashboards in Accessibility Mode in Salesforce Classic

In Salesforce Classic, you can edit dashboards in Accessibility mode.

#### SEE ALSO:

Delete a Dashboard

Install the CRM Sample Dashboards from AppExchange

#### Work with Salesforce Classic Dashboards

### **USER PERMISSIONS**

To create dashboards: Legacy Folder Sharing

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Run Reports AND Create and Customize

Dashboards

To edit and delete dashboards you created: Legacy Folder Sharing

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Run Reports AND Create and Customize

Dashboards

To edit and delete dashboards you created in public folders:

**Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

Enhanced Folder Sharing

Edit My Dashboards

To edit and delete dashboards you didn't create in public folders:

**Legacy Folder Sharing** 

Run Reports, Manage Dashboards AND

View All Data

**Enhanced Folder Sharing** 

Manage Dashboards in Public Folders

To create, edit, and delete dynamic dashboards:

**Legacy Folder Sharing** 

Manage Dynamic Dashboards

**Enhanced Folder Sharing** 

Manage Dynamic Dashboards

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

A *dashboard* shows data from source reports as visual components, which can be charts, gauges, tables, metrics, or Visualforce pages. The components provide a snapshot of key metrics and performance indicators for your organization.

Dashboard builder is a drag-and-drop interface for creating and modifying dashboards. You can use it to customize the whole dashboard, a column in the dashboard, or a component in the dashboard.



Tip: Dashboard builder uses a compressed page header to let you see more of the screen. To view your application tabs, simply close the builder or click the Salesforce logo.

To customize a dashboard, view it and click **Edit**.

#### IN THIS SECTION:

#### Add a Dashboard Component in Salesforce Classic

Add components by dragging a component type onto the dashboard, then dropping a data source (report, s-control, or Visualforce page) onto it.

#### Modify a Dashboard Component in Salesforce Classic

A dashboard component is a visual representation of the data in a report. You can change where the component's data comes from, what the data looks like in the component, and what kind of component it is.

SEE ALSO:

Add a Dashboard Filter
Build a Salesforce Classic Dashboard

Add a Dashboard Component in Salesforce Classic

## **USER PERMISSIONS**

To create dashboards: Legacy Folder Sharing

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Run Reports AND Create and Customize Dashboards

To edit and delete dashboards you created: Legacy Fold

**Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Run Reports AND Create and Customize Dashboards

To edit and delete dashboards you created in public folders:

**Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

Enhanced Folder Sharing

Edit My Dashboards

To edit and delete dashboards you didn't create in public folders:

**Legacy Folder Sharing** 

Run Reports, Manage Dashboards AND

View All Data

**Enhanced Folder Sharing** 

Manage Dashboards in Public Folders

To create, edit, and delete dynamic dashboards:

**Legacy Folder Sharing** 

Manage Dynamic Dashboards

**Enhanced Folder Sharing** 

Manage Dynamic Dashboards

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

Add components by dragging a component type onto the dashboard, then dropping a data source (report, s-control, or Visualforce page) onto it.

1. On the dashboard where you want to add a component, click Edit.

You can continue to edit the dashboard while components and data sources are loading.

**2.** Drag the component type you want from the Components tab onto your dashboard.

1 Tip: You can also drop the data source first, then drop a component type onto it.

To select the kind of component you need, consider the type of data you're showing and the uses it will serve.

|                  | Use a chart when you want to show data graphically. You can choose from a variety of chart types.  |
|------------------|--|
|                  | Use a gauge when you have a single value that you want to show within a range of custom values   |
|                  | Use a metric when you have one key value to display.   |
|                  | <ul> <li>Enter metric labels directly on components by clicking the empty text field next<br/>to the grand total.</li> </ul>   |
|                  | <ul> <li>Metric components placed directly above and below each other in a dashboard<br/>column are displayed together as a single component.</li> </ul>                       |
|                  | Use a table to show a set of report data in column form.   |
| Visualforce Page | Use a Visualforce page when you want to create a custom component or show information not available in another component type.   |
|                  | Visualforce Pages are only available in Salesforce Classic.  |
| Custom S-Control | Custom s-controls can contain any type of content that you can display in a browser, for example a Java applet, an Active-X control, an Excel file, or a custom HTML Web form. |
|                  | Custom S-Controls are only available in Salesforce Classic.  |

- **3.** Drag a report from the Data Sources tab onto the component you just dropped on the dashboard.
  - You can show a joined report that includes a chart on a dashboard. Edit the joined report dashboard component and select **Use chart as defined in the source report**.
  - If the dashboard has a filter, the data source must contain the filter field or an equivalent. If it doesn't, the filter may not work.
  - Some custom forecast and lead reports aren't available for dashboards.
  - For Visualforce components, the data source must be a Visualforce page.
  - Tip: Each folder can contain up to 200 data sources. To home in on the right data source quickly, try Quick Find or the **Recent**, **My**, and **All** filters.
- **4.** Click on your dashboard component.
- **5.** On the Component Data tab, choose which summary fields and groupings in the underlying report you want to display in your component.

(2) Tip: Make more fields available for a dashboard component by adding them to the source report chart. For example, create a combination chart on the report using vertical columns and lines. The additional groupings in the report chart are available to use in dashboard components.

**6.** On the Formatting tab, specify how your component shows its data. Your formatting choices depend on the component type you choose.

Note: For Visualforce pages and s-controls, set the Height.

#### 7. Click OK.

- **8.** Drag, drop and click to rearrange components on the dashboard.
  - Grab components by the header bar and drag them to the right location on the dashboard.
  - Click x for a data source to remove it from the component.
  - Click x for a component to remove it from the dashboard.
  - Click component header, title, and footer fields to edit them.
  - Change colors for picklist values displayed in dashboard components. You need the "Customize Application" permission to update picklists.
  - Optionally, for filtered dashboards, choose a different field in the Filtered By drop-down.

Modify a Dashboard Component in Salesforce Classic

## **USER PERMISSIONS**

To aroute doobboards

| To create dashboards:                      | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |  |  |
|--|--|--|--|
|  | <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards |  |  |
| To edit and delete dashboards you created: | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |  |  |
|  | Enhanced Folder Sharing  |  |  |

To edit and delete dashboards you created in public folders:

### **Legacy Folder Sharing**

Dashboards

Run Reports AND Manage Dashboards

Run Reports AND Create and Customize

**Enhanced Folder Sharing**Edit My Dashboards

To edit and delete dashboards you didn't create in public folders:

#### **Legacy Folder Sharing**

Run Reports, Manage Dashboards AND View All Data

#### **Enhanced Folder Sharing**

Manage Dashboards in Public Folders

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

To create, edit, and delete dynamic dashboards:

### **Legacy Folder Sharing**

Manage Dynamic Dashboards

#### **Enhanced Folder Sharing**

Manage Dynamic Dashboards

A dashboard component is a visual representation of the data in a report. You can change where the component's data comes from, what the data looks like in the component, and what kind of component it is.



**Note:** If you are using legacy folder sharing, you might see the **Edit** option for dashboards that you are not permitted to edit. To resolve this issue, turn on enhanced folder sharing.

Dashboard builder is a drag-and-drop interface for creating and modifying dashboards. Drag, drop and click to rearrange components on the dashboard. Hover details and drill-down are available when you view and not when you edit a dashboard.

#### IN THIS SECTION:

1. Make Fields Available in a Dashboard Component

Make more fields available for a dashboard component by adding them to the source report chart.

2. Choose Where Users Go When Clicking a Dashboard Component

You can edit a dashboard component so that when users click the component, they can drill down to the source report, filtered report, record detail page, or other URL.

3. Custom Four-Column Table

Table visuals are useful to list values of several items against some criteria. The fields you add to the source report chart are the ones available for the table columns in dashboards.

4. Dashboard Component Types

Dashboard components can be charts, tables, gauges, metrics, or other components that you can create with VisualForce.

5. Chart Types

You can show data in reports and dashboards in the form of bars, columns, lines, shapes, or other elements. Which is right depends on what the data is about and what you want to show with it.

6. Data Settings for Dashboard Chart Components

Choose the data you want to show on your report or dashboard chart. The chart automatically selects groupings and summary values from your report. You can override some of those choices to focus on the data you need to share.

7. Visual Settings for Dashboard Chart Components

Choose the type of chart that fits the data you are sharing, then apply the visual settings that will communicate the data most effectively.

SEE ALSO:

Add a Dashboard Filter

#### Make Fields Available in a Dashboard Component

Make more fields available for a dashboard component by adding them to the source report chart.

For example, create a combination chart on the report using vertical columns and lines. The additional groupings in the report chart are available to use in dashboard components.

#### Choose Where Users Go When Clicking a Dashboard Component

You can edit a dashboard component so that when users click the component, they can drill down to the source report, filtered report, record detail page, or other URL.

Edit a component and set the Drill Down to option on the Component Data tab. Choose one of these options:

- Source Report—Takes the user to the full source report for the dashboard component.
- Filtered Source Report—When users click individual groups, X-axis values, or legend entries, they are taken to the source report filtered by what they clicked.

For example, if you had a stacked vertical column chart of opportunities grouped by stage, with months as the X-axis, you could click an individual stage in a bar, a month on the X-axis, or a legend entry for a stage to drill down to the filtered source report. (Not available for gauges, metrics, or tables.)

- Record Detail Page—When users click chart or table elements, axis values, or legend entries, they are taken to the detail page for
  that record. You can only choose this option for tables and charts that use a source report grouped by record name, record owner,
  or feed post. (Not available for gauges or metrics.)
- Other URL—Takes the user to the URL that you specify. You can't add URLs that begin with "mailto:" or "javascript:" to dashboard components.

#### **Custom Four-Column Table**

Table visuals are useful to list values of several items against some criteria. The fields you add to the source report chart are the ones available for the table columns in dashboards.

Tables show two columns of data by default. They can show totals and up to four columns of data if you customize. You can also personalize the table and show users' Chatter photos as long as the table doesn't have more than 20 rows.

Before you customize a table, make sure your source report is in matrix or summary format and contains a chart.

1. To create a four-column table, edit a table component on a dashboard and click the **Customize Table** link. Customized tables allow null values in the results. Default two-column tables do not.



2. Which fields you can use in the table depends on the fields you picked in the source report chart:



**a.** The chart must contain groupings and at least one summary.

**b.** The first grouping in the report chart becomes the first column of the table. To show a different field as the first column in the table, select the desired grouping in the report chart.

**c.** Use a combination vertical bar or a scatter chart in the report to make more fields available for the table.

#### Example

You can use a table to show:

- Top sales reps for the quarter with the number of opportunities each won.
- Number of cases by product in the last three months.
- Number of accounts by region, the total number of opportunities available, and those won.

Take a look at this customized four-column table that shows the top sales reps by region with the number and value of opportunities they won.



### **Dashboard Component Types**

## USER PERMISSIONS

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|----|--------|------|---------|
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## **Legacy Folder Sharing**

Run Reports AND Manage Dashboards

### **Enhanced Folder Sharing**

Run Reports AND Create and Customize Dashboards

To edit and delete dashboards you created:

#### **Legacy Folder Sharing**

Run Reports AND Manage Dashboards

### **Enhanced Folder Sharing**

Run Reports AND Create and Customize Dashboards

To edit and delete dashboards you created in public folders:

### **Legacy Folder Sharing**

Run Reports AND Manage Dashboards

#### **Enhanced Folder Sharing**

Edit My Dashboards

To edit and delete dashboards you didn't create in public folders:

#### **Legacy Folder Sharing**

Run Reports, Manage Dashboards AND View All Data

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

### **Enhanced Folder Sharing**

Manage Dashboards in Public Folders

To create, edit, and delete dynamic dashboards:

### **Legacy Folder Sharing**

Manage Dynamic Dashboards

## **Enhanced Folder Sharing**

Manage Dynamic Dashboards

Dashboard components can be charts, tables, gauges, metrics, or other components that you can create with VisualForce.

| Component Type   | Image | Description  |
|------------------|-------|--|
| Chart            |       | Use a chart when you want to show data graphically. You can choose from a variety of chart types.  |
| Gauge            |       | Use a gauge when you have a single value that you want to show within a range of custom values. For example, to create a dashboard that measures where your current closed opportunity amounts fall within a range of values, set the Minimum Value, Breakpoint #1 Value, Breakpoint #2 Value, and Maximum Value for the gauge. The ranges that you set can indicate poor, acceptable, and good performance. Set appropriate colors for each of these ranges to visually indicate progress. To create a gauge with only two ranges, leave Breakpoint #2 Value blank. |
|                  |       | Select Show Percentage or Show Total to display those values on the gauge. Values exceeding the maximum are shown as greater than 100%.  |
| Metric           |       | Use a metric when you have one key value to display. For example, if you have a report showing the total amount for all opportunities in the Closed, Commit, and Base Case stages in the current month, you can name that value and use it as a revenue target for the month displayed on the dashboard.   |
| Table            |       | Use a table to show a set of report data in column form. For example, to see the top 20 opportunities by amount, set Maximum Values Displayed to 20, click <b>Customize Table</b> and select opportunity name, amount, and other columns to display, choose the sort order, and set conditional highlighting. Available columns include all chart groupings and report summary fields, as well as the second-level grouping defined in the report.   |
| Visualforce Page | N/A   | Use a Visualforce page when you want to create a custom component or show information not available in another component type. For example, a Visualforce page can display data from an external system or show Salesforce data in a custom way. Visualforce pages must meet certain requirements to be displayed in dashboards; otherwise, they don't appear in the Visualforce Page drop-down list. See Creating Visualforce Dashboard Components.   |

| Component Type  | Image | Description  |
|---|-------|--|
| Custom S-Control N/A Custom s-controls can contain any type of content that you can display in a browser, a Java applet, an Active-X control, an Excel file, or a custom HTML Web form. |       | Custom s-controls can contain any type of content that you can display in a browser, for example a Java applet, an Active-X control, an Excel file, or a custom HTML Web form.               |
|   |       | (1) Important: Visualforce pages supersede s-controls. Organizations that haven't previously used s-controls can't create them. Existing s-controls are unaffected, and can still be edited. |

#### SEE ALSO:

Modify a Dashboard Component in Salesforce Classic

#### **Chart Types**

You can show data in reports and dashboards in the form of bars, columns, lines, shapes, or other elements. Which is right depends on what the data is about and what you want to show with it.

#### IN THIS SECTION:

#### 1. Bar Charts

A bar chart shows values as horizontal lengths, so this format can be good for comparing distance or time. Use a bar chart when you have a summary report with a single grouping, or you only want to display one grouping.

#### 2. Column Charts

A column chart is very much like a bar chart, but it can be a better format for showing relative counts of things, such as leads or dollars. Use a column chart when you have a summary report with a single grouping, or you only want to display one grouping.

#### 3. Line Charts

Line charts are good for showing changes in the value of an item over a series of points in time, such as week to week or quarter to quarter. Use a line chart when you have one important grouping representing an ordered set of data and one value to show.

#### 4. Pie Charts

Use a pie chart when you have multiple groupings and want to show the proportion of a single value for each grouping against the total.

#### 5. Donut Charts

Use a donut chart when you have multiple groupings and want to show not only the proportion of a single value for each grouping against the total, but also the total amount itself.

#### 6. Funnel Charts

Use a funnel chart when you have multiple groupings in an ordered set and want to show the proportions among them.

### 7. Scatter Charts

Use scatter charts to show meaningful information using one or two groups of report data plus summaries.

#### SEE ALSO:

**Scatter Charts** 

Modify a Dashboard Component in Salesforce Classic

Create a Custom Report in Accessibility Mode

Show Different Data Sets in One Chart

Data Settings for Dashboard Chart Components

Visual Settings for Dashboard Chart Components

#### Bar Charts

A bar chart shows values as horizontal lengths, so this format can be good for comparing distance or time. Use a bar chart when you have a summary report with a single grouping, or you only want to display one grouping.



For example, to see the amount in each sales stage in a report, select Sum of Amount as the X-axis and Stage as the Y-axis. The chart displays one bar for each stage, with the length proportional to the total opportunity amount.

The advantage of the horizontal bar charts is that the chart can be extended vertically to show numerous groupings, though the width is fixed. Depending on chart settings, you can also display Chatter photos.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

#### IN THIS SECTION:

#### 1. Grouped Bar Charts

Use a grouped bar chart when you have multiple groupings, and you want to compare values within a secondary grouping, but not the totals.

#### 2. Stacked Bar Charts

Use a stacked bar chart when you have multiple groupings and are interested in the proportions between values in each grouping, as well as each grouping's total.

#### 3. Bar Charts Stacked to 100%

Use a bar chart stacked to 100 percent when you have multiple groupings and are interested in the proportions between values in each grouping, as well as each grouping's total.

#### SEE ALSO:

Data Settings for Dashboard Bar and Column Chart Components Formatting Settings for Dashboard Bar Chart Components

**Grouped Bar Charts** 

Use a grouped bar chart when you have multiple groupings, and you want to compare values within a secondary grouping, but not the totals.



For example, to compare the amount of deals closed each month by lead source in a report, set amount as the X-axis, source as the Y-axis, and closing month as the Groupings value. The chart displays a set of bars for each source, one bar for each month. The monthly differences within a particular source are easy to compare.

You can also compare a given month across sources, but comparing the total number of leads for each source may be difficult.



Tip: Use a stacked chart to compare totals.

#### Stacked Bar Charts

Use a stacked bar chart when you have multiple groupings and are interested in the proportions between values in each grouping, as well as each grouping's total.



For example, to compare the status of leads by campaign in a report, and also to compare the totals for each status, set record count as the X-axis, status as the Y-axis, and campaign as the Groupings value. The chart displays a single bar for each status, broken down by campaign, with each campaign shown in a different color.

The proportion of each campaign in each status is easy to compare, as are the totals for each status, but comparing a single campaign's contribution to different statuses, or to the total, may be difficult.

#### Bar Charts Stacked to 100%

Use a bar chart stacked to 100 percent when you have multiple groupings and are interested in the proportions between values in each grouping, as well as each grouping's total.



For example, to compare the status of leads by campaign in a report, and also to compare the totals for each status, set record count as the X-axis, status as the Y-axis, and campaign as the Groupings value. The chart displays a single bar for each status, broken down by campaign, with each campaign shown in a different color.

The proportion of each campaign in each status is easy to compare, as are the totals for each status, but comparing a single campaign's contribution to different statuses, or to the total, may be difficult.

Column Charts

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

A column chart is very much like a bar chart, but it can be a better format for showing relative counts of things, such as leads or dollars. Use a column chart when you have a summary report with a single grouping, or you only want to display one grouping.



For example, to see the number of leads by lead source in a report, set record count as the Y-axis and source as the X-axis. The chart displays one column for each source, with the height proportional to the total number of leads. The width of column charts is constrained by dashboard column size and report chart size. Horizontal bar charts may be better for large numbers of groupings. Column charts are good when showing values by date, since dates traditionally run along the X-axis.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Group, Professional, Enterprise, Performance, Unlimited. and **Developer** Editions

#### IN THIS SECTION:

#### 1. Grouped Column Charts

Use a grouped column chart when you have multiple groupings, and you want to compare values within a secondary grouping, but not the totals.

#### 2. Stacked Column Charts

Use a stacked column chart when you have multiple groupings and you're interested in the proportions between values in each grouping, as well as each grouping's total.

#### 3. Stacked Bar Charts

Use a stacked bar chart when you have multiple groupings and are interested in the proportions between values in each grouping, as well as each grouping's total.

#### 4. Column Chart Stacked to 100 Percent

Use a column chart stacked to 100 percent when you have multiple groupings and are interested in the proportions between values in each grouping, as well as each grouping's total.

#### **Grouped Column Charts**

Use a grouped column chart when you have multiple groupings, and you want to compare values within a secondary grouping, but not the totals.



For example, to compare the number of opportunities created each month by campaign source in a report, set record count as the Y-axis, created month as the X-axis, and source as the Groupings value. The chart displays a set of bars for each month, one bar for each campaign source. The differences between sources within a particular month are easy to compare.

You can also compare a particular source across months, but comparing the total number of opportunities for each month may be difficult.



Tip: Use a stacked chart to compare totals.

Stacked Column Charts

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Use a stacked column chart when you have multiple groupings and you're interested in the proportions between values in each grouping, as well as each grouping's total.



For example, to compare the number of opportunities created each month by campaign source in a report, and also to compare the totals for each month, set record count as the Y-axis, created month as the X-axis, and source as the Groupings value. The chart displays a single bar for each month, broken down by source, with each source shown in a different color.

The proportion of each source in each month is easy to compare, as are the monthly totals, but comparing a single source's contribution to different months, or to the total, may be difficult.

#### Stacked Bar Charts

Use a stacked bar chart when you have multiple groupings and are interested in the proportions between values in each grouping, as well as each grouping's total.



For example, to compare the status of leads by campaign in a report, and also to compare the totals for each status, set record count as the X-axis, status as the Y-axis, and campaign as the Groupings value. The chart displays a single bar for each status, broken down by campaign, with each campaign shown in a different color.

The proportion of each campaign in each status is easy to compare, as are the totals for each status, but comparing a single campaign's contribution to different statuses, or to the total, may be difficult.

#### Column Chart Stacked to 100 Percent

Use a column chart stacked to 100 percent when you have multiple groupings and are interested in the proportions between values in each grouping, as well as each grouping's total.



For example, to compare the number of opportunities created each month by campaign source in a report, and also to compare the totals for each month, set record count as the Y-axis, created month as the X-axis, and source as the Groupings value. The chart displays a single bar for each month, broken down by source, with each source shown in a different color. The proportion of each source in each month is easy to compare, as are the monthly totals, but comparing a single source's contribution to different months, or to the total, may be difficult.

Line Charts

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Line charts are good for showing changes in the value of an item over a series of points in time, such as week to week or quarter to quarter. Use a line chart when you have one important grouping representing an ordered set of data and one value to show.



Line charts are useful for showing data over time. For example, to see the numbers of leads created each month in a report, set record count as the Y-axis and created month for the X-axis. The chart displays a line connecting the record count totals for each month. Salesforce does not plot missing (null) values.

If a missing value occurs in the middle of a data set, Salesforce displays a gap in the line.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

#### IN THIS SECTION:

#### 1. Grouped Line Charts

Use a grouped line chart when you have multiple groupings—each with one important secondary grouping representing an ordered set of data—and one value to show.

#### 2. Cumulative Line Charts

Use a cumulative line chart when you have one important grouping representing an ordered set of data and one value to show, summed over time.

#### 3. Grouped Cumulative Line Charts

Use a cumulative line chart when you have one important grouping representing an ordered set of data and one value to show, summed over time. Use a grouped line chart when you have multiple groupings—each with one important secondary grouping representing an ordered set of data—and one value to show.

#### **Grouped Line Charts**

Use a grouped line chart when you have multiple groupings—each with one important secondary grouping representing an ordered set of data—and one value to show.



For example, to see monthly leads by lead source in a report, set record count as the Y-axis, created month as the X-axis, and source as the Groupings value. The chart displays a line for each source, connecting that source's record count totals for each month. Each line spans the earliest to the latest month containing data. Comparing the total numbers for each month may be difficult.

Salesforce does not plot missing (null) values. If a missing value occurs in the middle of a data set, Salesforce displays a gap in the line.

Cumulative Line Charts

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Use a cumulative line chart when you have one important grouping representing an ordered set of data and one value to show, summed over time.



For example, to see the total amount of closed opportunities by day in the current month in a report, set amount as the Y-axis and closing day as the X-axis. The chart displays one line, with the line's height representing the cumulative amount of closed opportunities up to and including that day. You can't see the amount for any single day—only the cumulative amount.

If the data set contains a missing (null) value, Salesforce continues the line using the previous value in the data set.

#### **Grouped Cumulative Line Charts**

Use a cumulative line chart when you have one important grouping representing an ordered set of data and one value to show, summed over time. Use a grouped line chart when you have multiple groupings—each with one important secondary grouping representing an ordered set of data—and one value to show.



For example, to see the total amount of closed opportunities by day for each of the last three months in a report, set amount as the Y-axis, closing day as the X-axis, and closing month as the Groupings value. The chart displays a line for each month, with the line's height representing the cumulative amount of closed opportunities up to and including that day.

#### Pie Charts

Use a pie chart when you have multiple groupings and want to show the proportion of a single value for each grouping against the total.



For example, to see the breakdown of your case queue by case status in a report, set record count for Values and status for Wedges. The chart displays a circle made up of wedges, each wedge representing the cases in a case status. Wedge size is proportional to the numbers of cases.

Pie charts are not ideal for comparing values that are close together or numerous small values.

Select Show Labels, Show Values, or Show Wedge % to include that information on the chart. (Only available with Chart Analytics 2.0.)

Donut Charts

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

## EDITIONS

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Use a donut chart when you have multiple groupings and want to show not only the proportion of a single value for each grouping against the total, but also the total amount itself.



For example, to see the breakdown of your case queue by case status in a report, as well as the total number of cases, set record count for Values and status for Wedges. The chart displays a donut made up of wedges, each wedge representing a case status. Wedge size is proportional to the numbers of cases. The total number of cases for all statuses is shown in the middle.

Select Show Labels, Show Values, Show Wedge %, or Show Total to include that information on the chart.

#### **Funnel Charts**

Use a funnel chart when you have multiple groupings in an ordered set and want to show the proportions among them.



For example, to see the amount of opportunities in each stage in a report, set amount for Values and stage for Segments. Since the Opportunity: Stage field is an ordered picklist, the stages are sorted in the same order as the picklist, with each segment representing the amount for that stage. Funnel charts are useful for showing the flow of opportunities through the stages; a substantially larger segment may indicate a bottle-neck at that stage.

Select Show Labels, Show Values, or Show Segment % to include that information on the chart.

#### **Scatter Charts**

Use scatter charts to show meaningful information using one or two groups of report data plus summaries.



For example, to see how stage duration correlates with the number of activities for opportunities, group your report by Opportunity Name and plot the scatter chart by the grouping. Then set X-Axis on the chart to Record Count and Y-Axis to Stage Duration. The chart will show a dot for each opportunity. You can tell at a glance if the stage duration is shorter for opportunities that have more activities.

Because a scatter chart shows data grouped by summarized values, you need at least one grouping in your report. Choose a report format that allows groupings, such as, summary, matrix, or joined.

You also need at least one summarized field in the report to show data on the axes of the chart. Otherwise, the chart will show record count on the axes. Scatter charts automatically show data from the source report or you can manually choose what information to display for groupings and summaries.

| If your source report has  | The X-axis automatically displays | The Y-axis automatically displays                             |
|----------------------------|-----------------------------------|---|
| No summary fields          | Record count.                     | Record count.   |
| One or more summary fields | First summary.                    | • Either record count or the second summary in report charts. |

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

 The first summary in dashboard charts even if the source report has multiple summaries. But you can manually choose a different summary to show on the axis.

This is a report on closed won opportunities grouped by account and opportunity owner. A scatter chart can reveal the potential for tapping into accounts with a higher annual revenue.



This chart builds on some key fields:

- 1. Plot By automatically chooses the first report grouping. We manually chose the second grouping to show opportunities won by Account Name.
- 2. **X-axis** shows record count when there are no summarized fields or autoselects the first summary field. Since summary is more useful, the chart shows Sum of Won Amount.
- 3. Y-axis here shows a manually selected summary field, Average Annual Revenue.
- **4. Group By** is not set by default. Since the report has another grouping, the chart groups data further by the manually selected Opportunity Owner grouping. The colored dots in the chart and legend show this grouping.

The scatter chart component type in dashboards has these limitations:

- It doesn't show tabular reports.
- You can't sort by labels or values.
- You can only change how Y-axis units are displayed.
- You can manually define the range for Y-axis alone.

#### SEE ALSO:

**Chart Types** 

Modify a Dashboard Component in Salesforce Classic

Data Settings for Dashboard Scatter Chart Components

Formatting Settings for Dashboard Scatter Chart Components

Data Settings for Dashboard Scatter Chart Components

Formatting Settings for Dashboard Scatter Chart Components

### **Data Settings for Dashboard Chart Components**

Choose the data you want to show on your report or dashboard chart. The chart automatically selects groupings and summary values from your report. You can override some of those choices to focus on the data you need to share.

#### IN THIS SECTION:

1. Scatter Charts

Use scatter charts to show meaningful information using one or two groups of report data plus summaries.

2. Data Settings for Dashboard Bar and Column Chart Components

Horizontal bar and vertical column charts are useful for comparing the values of one or more report groupings. Use the Component Data tab to select the groupings and summaries you want your bar or column chart to display.

3. Data Settings for Dashboard Funnel Chart Components

Funnel charts are useful for showing the flow of opportunities through stages.

4. Data Settings for Dashboard Scatter Chart Components

Scatter charts are useful to show one or two groups of report data plus summaries. These data settings for the scatter chart are available in the dashboard component editor under **Component Data**.

5. Data Settings for Dashboard Gauge Components

A gauge is used to see how far you are from reaching a goal. It displays a single value, such as closed deals.

6. Data Settings for Dashboard Line Chart Components

Line charts are useful for showing data over time.

7. Data Settings for Dashboard Metric Components

The settings on the Component Data tab define how your dashboard metric component gets and manages the data it displays.

8. Data Settings for Dashboard Pie and Donut Chart Components

A pie chart or a donut chart is good for showing the relative shares of different quantities. Use the component data tab to select the values your pie or donut chart will compare.

9. Data Settings for Dashboard Table Components

A table component shows columns of data from a custom report in a dashboard. The settings on the Component Data tab control how a table component gets and manages the data it displays.

#### Scatter Charts

Use scatter charts to show meaningful information using one or two groups of report data plus summaries.



For example, to see how stage duration correlates with the number of activities for opportunities, group your report by Opportunity Name and plot the scatter chart by the grouping. Then set X-Axis on the chart to Record Count and Y-Axis to Stage Duration. The chart will show a dot for each opportunity. You can tell at a glance if the stage duration is shorter for opportunities that have more activities.

Because a scatter chart shows data grouped by summarized values, you need at least one grouping in your report. Choose a report format that allows groupings, such as, summary, matrix, or joined.

## EDITIONS

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

You also need at least one summarized field in the report to show data on the axes of the chart. Otherwise, the chart will show record count on the axes. Scatter charts automatically show data from the source report or you can manually choose what information to display for groupings and summaries.

| If your source report has  | The X-axis automatically displays | The Y-axis automatically displays   |
|----------------------------|-----------------------------------|---|
| No summary fields          | Record count.                     | Record count.   |
| One or more summary fields | First summary.                    | <ul> <li>Either record count or the second summary in report charts.</li> <li>The first summary in dashboard charts even if the source report has multiple summaries. But you can manually choose a different summary to show on the axis.</li> </ul> |

This is a report on closed won opportunities grouped by account and opportunity owner. A scatter chart can reveal the potential for tapping into accounts with a higher annual revenue.



This chart builds on some key fields:

- 1. **Plot By** automatically chooses the first report grouping. We manually chose the second grouping to show opportunities won by Account. Name.
- 2. **X-axis** shows record count when there are no summarized fields or autoselects the first summary field. Since summary is more useful, the chart shows Sum of Won Amount.
- 3. Y-axis here shows a manually selected summary field, Average Annual Revenue.
- **4. Group By** is not set by default. Since the report has another grouping, the chart groups data further by the manually selected Opportunity Owner grouping. The colored dots in the chart and legend show this grouping.

The scatter chart component type in dashboards has these limitations:

- It doesn't show tabular reports.
- You can't sort by labels or values.
- You can only change how Y-axis units are displayed.

• You can manually define the range for Y-axis alone.

#### SEE ALSO:

**Chart Types** 

Modify a Dashboard Component in Salesforce Classic

Data Settings for Dashboard Scatter Chart Components

Formatting Settings for Dashboard Scatter Chart Components

Data Settings for Dashboard Scatter Chart Components

Formatting Settings for Dashboard Scatter Chart Components

Data Settings for Dashboard Bar and Column Chart Components

## **USER PERMISSIONS**

To create, edit, and delete dynamic

dashboards:

| To create dashboards:  | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|--|--|
|  | <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards |
| To edit and delete dashboards you created:                         | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|  | <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards |
| To edit and delete dashboards you created in public folders:       | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|  | <b>Enhanced Folder Sharing</b> Edit My Dashboards                              |
| To edit and delete dashboards you didn't create in public folders: | <b>Legacy Folder Sharing</b> Run Reports, Manage Dashboards AND View All Data  |
|  | <b>Enhanced Folder Sharing</b> Manage Dashboards in Public Folders             |

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

Horizontal bar and vertical column charts are useful for comparing the values of one or more report groupings. Use the Component Data tab to select the groupings and summaries you want your bar or column chart to display.

**Legacy Folder Sharing** 

**Enhanced Folder Sharing** 

Manage Dynamic Dashboards

Manage Dynamic Dashboards

Choose what values to display on the axes of your chart. Depending on the chart type, axis values can be record count, summary fields, or groupings defined in the report. For example, to see the amount in each sales stage in a report, select Sum of Amount as the X-axis and Stage as the Y-axis. The chart displays one bar for each stage, with the length proportional to the total opportunity amount.

| Description   |
|---|
| Choose what values to display on the horizontal axis of your bar, column, scatter, or line chart. Depending on the chart type, axis values can be summary fields or groupings. To use the second grouping or summary field defined in the source report's chart, select <code>Auto</code> . When the source report has a chart, Auto picks the values used by the chart. If the X-axis corresponds to a custom summary formula that has the <code>Where Will this Formula Be Displayed?</code> option set to a grouping level other than <code>All summary levels</code> , then the Y-axis and Groupings selection must correspond to that custom summary formula's grouping level. |
| Choose what values to display on the vertical axis of your bar, column, scatter, or line chart. Depending on the chart type, axis values can be summary fields or groupings. To use the second grouping or summary field defined in the source report's chart, select $Auto$ . When the source report has a chart, Auto picks the values used by the chart. If the Y-axis corresponds to a custom summary formula that has the Where Will this Formula Be Displayed? option set to a grouping level other than All summary levels, then the X-axis and Groupings selection must correspond to that custom summary formula's grouping level.   |
| Choose how to group information on your chart. This option is available only if the underlying report has more than one grouping. To use the second grouping or summary field defined in the source report's chart, select Auto.  |
| Select this option to plot additional values on this chart. The chart type you chose must allow combination charts.   |
| Choose a scale for displaying your chart values. For table components, this setting applies only to the first column. For best results, choose Auto to let Salesforce select appropriate units.   |
| Select where users go when they click a dashboard component: the full source report for the dashboard component; the source report filtered by the group, X-axis value, or legend entry they clicked; the detail page for a chart or table element, axis value, or legend entry; or a URL that you specify. (You can't use URLs that begin with "mailto:" or "javascript:".) Filtered and record detail page drill-down are disabled when viewing dashboard charts with more than 200 values.   |
|   |

#### SEE ALSO:

Formatting Settings for Dashboard Bar Chart Components

Data Settings for Dashboard Funnel Chart Components

## **USER PERMISSIONS**

To create dashboards: **Legacy Folder Sharing** Run Reports AND Manage Dashboards **Enhanced Folder Sharing** Run Reports AND Create and Customize Dashboards To edit and delete dashboards you created: **Legacy Folder Sharing** Run Reports AND Manage Dashboards **Enhanced Folder Sharing** Run Reports AND Create and Customize Dashboards To edit and delete dashboards you created **Legacy Folder Sharing** in public folders: Run Reports AND Manage Dashboards **Enhanced Folder Sharing** Edit My Dashboards To edit and delete dashboards you didn't **Legacy Folder Sharing** create in public folders: Run Reports, Manage Dashboards AND View All Data **Enhanced Folder Sharing** Manage Dashboards in Public Folders To create, edit, and delete dynamic **Legacy Folder Sharing** dashboards: Manage Dynamic Dashboards **Enhanced Folder Sharing** Manage Dynamic Dashboards

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

Funnel charts are useful for showing the flow of opportunities through stages.

Choose what values to display on the axes of your chart. Depending on the chart type, axis values can be record count, summary fields, or groupings defined in the report.

| Setting       | Description   |
|---------------|---|
| Display Units | Choose a scale for displaying your chart values. For table components, this setting applies only to the first column. For best results, choose Auto to let Salesforce select appropriate units.   |
| Drill Down to | Select where users go when they click a dashboard component: the full source report for the dashboard component; the source report filtered by the group, X-axis value, or legend entry they clicked; the detail page for a chart or table element, axis value, or legend entry; or a URL that you specify. (You can't use URLs that begin with "mailto:" or "javascript:".) Filtered and record detail page drill-down are disabled when viewing dashboard charts with more than 200 values. |

| Setting  | Description   |
|----------|---|
| Values   | Choose what to display as values for your pie chart, donut chart, funnel chart, gauge, or metric. To use the second grouping or summary field defined in the source report's chart, select Auto. When the source report has a chart, Auto picks the values used by the chart. In gauges and metrics, Auto shows the value of the first summary field. |
| Segments | Choose what to display as segments for your funnel chart. To use the second grouping or summary field defined in the source report's chart, select Auto. When the source report has a chart, Auto picks the values used by the chart.   |

#### SEE ALSO:

## Formatting Settings for Funnel Dashboard Components

Data Settings for Dashboard Scatter Chart Components

## USER PERMISSIONS

| To create dashboards:  | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|--|--|
|  | Enhanced Folder Sharing Run Reports AND Create and Customize Dashboards        |
| To edit and delete dashboards you created:                         | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|  | <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards |
| To edit and delete dashboards you created in public folders:       | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|  | <b>Enhanced Folder Sharing</b> Edit My Dashboards                              |
| To edit and delete dashboards you didn't create in public folders: | Legacy Folder Sharing Run Reports, Manage Dashboards AND View All Data         |
|  | <b>Enhanced Folder Sharing</b> Manage Dashboards in Public Folders             |
| To create, edit, and delete dynamic dashboards:                    | <b>Legacy Folder Sharing</b> Manage Dynamic Dashboards                         |
|  | <b>Enhanced Folder Sharing</b> Manage Dynamic Dashboards                       |

## EDITIONS

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Scatter charts are useful to show one or two groups of report data plus summaries. These data settings for the scatter chart are available in the dashboard component editor under **Component Data**.

Group and set the scale to help users make sense of the data you are displaying.

| Setting       | Description  |  |
|---------------|--|--|
| Plot By       | Choose the grouping to display on your chart. To always use the first grouping or use what's in the source report's chart, pick Auto.  |  |
| X-Axis        | Choose the values to display on the horizontal axis.   |  |
| Y-Axis        | Choose what values to display on the vertical axis of your bar, column, scatter, or line chart. Depending on the chart type, axis values can be summary fields or groupings. To use the second grouping or summary field defined in the source report's chart, select <code>Auto</code> . When the source report has a chart, Auto picks the values used by the chart. If the Y-axis corresponds to a custom summary formula that has the <code>WhereWill this Formula Be Displayed?</code> option set to a grouping level other than <code>All summary levels</code> , then the X-axis and Groupings selection must correspond to that custom summary formula's grouping level. |  |
| Group By      | Choose how to group information on your chart. This option is available only if the underlying report has more than one grouping. To use the second grouping or summary field defined in the source report's chart select Auto.  |  |
| Display Units | Change the measure for values displayed on the Y-axis of the chart.  |  |
| Drill Down to | Select where users go when they click the chart. Options include the source report, the filtered source report, record detail page, or a URL you specify. Filtered report and record detail page options are unavailable when the chart has more than 200 values.  |  |

#### SEE ALSO:

**Scatter Charts** 

Modify a Dashboard Component in Salesforce Classic

Formatting Settings for Dashboard Scatter Chart Components

Data Settings for Dashboard Gauge Components

## **USER PERMISSIONS**

| To create dashboards:                      | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|--|--|
|  | <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards |
| To edit and delete dashboards you created: | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|  | <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards |

## EDITIONS

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

| <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                |  |
|---|--|
| <b>Enhanced Folder Sharing</b> Edit My Dashboards                             |  |
| <b>Legacy Folder Sharing</b> Run Reports, Manage Dashboards AND View All Data |  |
| <b>Enhanced Folder Sharing</b> Manage Dashboards in Public Folders            |  |
| <b>Legacy Folder Sharing</b> Manage Dynamic Dashboards                        |  |
| <b>Enhanced Folder Sharing</b> Manage Dynamic Dashboards                      |  |
| -   |  |

A gauge is used to see how far you are from reaching a goal. It displays a single value, such as closed deals.

| Setting       | Description   |
|---------------|---|
| Values        | Choose what to display as values for your pie chart, donut chart, funnel chart, gauge, or metric. To use the second grouping or summary field defined in the source report's chart, select Auto. When the source report has a chart, Auto picks the values used by the chart. In gauges and metrics, Auto shows the value of the first summary field.   |
| Display Units | Choose a scale for displaying your chart values. For table components, this setting applies only to the first column. For best results, choose Auto to let Salesforce select appropriate units.   |
| Drill Down to | Select where users go when they click a dashboard component: the full source report for the dashboard component; the source report filtered by the group, X-axis value, or legend entry they clicked; the detail page for a chart or table element, axis value, or legend entry; or a URL that you specify. (You can't use URLs that begin with "mailto:" or "javascript:".) Filtered and record detail page drill-down are disabled when viewing dashboard charts with more than 200 values. |

## SEE ALSO:

Formatting Settings for Dashboard Gauge Components

Data Settings for Dashboard Line Chart Components

## **USER PERMISSIONS**

| To create dashboards:  | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|--|--|
|  | <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards |
| To edit and delete dashboards you created:                         | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|  | <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards |
| To edit and delete dashboards you created in public folders:       | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|  | <b>Enhanced Folder Sharing</b> Edit My Dashboards                              |
| To edit and delete dashboards you didn't create in public folders: | <b>Legacy Folder Sharing</b> Run Reports, Manage Dashboards AND View All Data  |
|  | <b>Enhanced Folder Sharing</b> Manage Dashboards in Public Folders             |
| To create, edit, and delete dynamic dashboards:                    | <b>Legacy Folder Sharing</b> Manage Dynamic Dashboards                         |
|  | <b>Enhanced Folder Sharing</b> Manage Dynamic Dashboards                       |

# EDITIONS

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

Line charts are useful for showing data over time.

For example, to see the numbers of leads created each month in a report, set record count as the Y-axis and created month for the X-axis. The chart displays a line connecting the record count totals for each month.

| Setting | Description  |
|---------|--|
| Y-Axis  | Choose what values to display on the vertical axis of your bar, column, scatter, or line chart. Depending on the chart type, axis values can be summary fields or groupings. To use the second grouping or summary field defined in the source report's chart, select Auto. When the source report has a chart, Auto picks the values used by the chart. If the Y-axis corresponds to a custom summary formula that has the Where Will this Formula Be Displayed? option set to a grouping level other than All summary levels, then the X-axis and Groupings selection must correspond to that custom summary formula's grouping level. |

| Setting           | Description  |
|-------------------|--|
| X-Axis            | Choose what values to display on the horizontal axis of your bar, column, scatter, or line chart. Depending on the chart type, axis values can be summary fields or groupings. To use the second grouping or summary field defined in the source report's chart, select <code>Auto</code> . When the source report has a chart, Auto picks the values used by the chart. If the X-axis corresponds to a custom summary formula that has the Where Will this <code>Formula Be Displayed?</code> option set to a grouping level other than <code>Allsummary levels</code> , then the Y-axis and Groupings selection must correspond to that custom summary formula's grouping level. |
| Group By          | Choose how to group information on your chart. This option is available only if the underlying report has more than one grouping. To use the second grouping or summary field defined in the source report's chart, select <code>Auto</code> .   |
| Combination Chart | Select this option to plot additional values on this chart. The chart type you chose must allow combination charts.  |
| Display Units     | Choose a scale for displaying your chart values. For table components, this setting applies only to the first column. For best results, choose Auto to let Salesforce select appropriate units.  |
| Drill Down to     | Select where users go when they click a dashboard component: the full source report for the dashboard component; the source report filtered by the group, X-axis value, or legend entry they clicked; the detail page for a chart or table element, axis value, or legend entry; or a URL that you specify. (You can't use URLs that begin with "mailto:" or "javascript:".) Filtered and record detail page drill-down are disabled when viewing dashboard charts with more than 200 values.  |

SEE ALSO:

Formatting Settings for Dashboard Line Chart Components

Data Settings for Dashboard Metric Components

## **USER PERMISSIONS**

| To create dashboards:  | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|--|--|
|  | <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards |
| To edit and delete dashboards you created:                   | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|  | <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards |
| To edit and delete dashboards you created in public folders: | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |

## EDITIONS

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

|  | Enhanced Folder Sharing Edit My Dashboards                                    |
|--|---|
| To edit and delete dashboards you didn't create in public folders: | <b>Legacy Folder Sharing</b> Run Reports, Manage Dashboards AND View All Data |
|  | <b>Enhanced Folder Sharing</b> Manage Dashboards in Public Folders            |
| To create, edit, and delete dynamic dashboards:                    | <b>Legacy Folder Sharing</b> Manage Dynamic Dashboards                        |
|  | <b>Enhanced Folder Sharing</b> Manage Dynamic Dashboards                      |

The settings on the Component Data tab define how your dashboard metric component gets and manages the data it displays.

| Setting       | Description   |
|---------------|---|
| Values        | Choose what to display as values for your pie chart, donut chart, funnel chart, gauge, or metric. To use the second grouping or summary field defined in the source report's chart, select <code>Auto</code> . When the source report has a chart, Auto picks the values used by the chart. In gauges and metrics, Auto shows the value of the first summary field.   |
| Display Units | Choose a scale for displaying your chart values. For table components, this setting applies only to the first column. For best results, choose Auto to let Salesforce select appropriate units.   |
| Drill Down to | Select where users go when they click a dashboard component: the full source report for the dashboard component; the source report filtered by the group, X-axis value, or legend entry they clicked; the detail page for a chart or table element, axis value, or legend entry; or a URL that you specify. (You can't use URLs that begin with "mailto:" or "javascript:".) Filtered and record detail page drill-down are disabled when viewing dashboard charts with more than 200 values. |

## SEE ALSO:

Formatting Settings for Dashboard Metric Components

Data Settings for Dashboard Pie and Donut Chart Components

## **USER PERMISSIONS**

To create dashboards: **Legacy Folder Sharing** Run Reports AND Manage Dashboards **Enhanced Folder Sharing** Run Reports AND Create and Customize Dashboards To edit and delete dashboards you created: **Legacy Folder Sharing** Run Reports AND Manage Dashboards **Enhanced Folder Sharing** Run Reports AND Create and Customize Dashboards To edit and delete dashboards you created **Legacy Folder Sharing** in public folders: Run Reports AND Manage Dashboards **Enhanced Folder Sharing** Edit My Dashboards To edit and delete dashboards you didn't **Legacy Folder Sharing** create in public folders: Run Reports, Manage Dashboards AND View All Data **Enhanced Folder Sharing** Manage Dashboards in Public Folders To create, edit, and delete dynamic **Legacy Folder Sharing** dashboards: Manage Dynamic Dashboards **Enhanced Folder Sharing** Manage Dynamic Dashboards

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

A pie chart or a donut chart is good for showing the relative shares of different quantities. Use the component data tab to select the values your pie or donut chart will compare.

Use a pie chart when you have multiple groupings and want to show the proportion of a single value for each grouping against the total.

For example, to see the breakdown of your case queue by case status in a report, set record count for Values and status for Wedges. The chart displays a circle made up of wedges, each wedge representing the cases in a case status.

| Setting | Description   |
|---------|---|
| Values  | Choose what to display as values for your pie chart, donut chart, funnel chart, gauge, or metric. To use the second grouping or summary field defined in the source report's chart, select Auto. When the source report has a chart, Auto picks the values used by the chart. In gauges and metrics, Auto shows the value of the first summary field. |

| Setting       | Description   |
|---------------|---|
| Wedges        | Choose what to display as wedges for your pie or donut chart. To use the second grouping or summary field defined in the source report's chart, select Auto. When the source report has a chart, Auto picks the values used by the chart.   |
| Display Units | Choose a scale for displaying your chart values. For table components, this setting applies only to the first column. For best results, choose Auto to let Salesforce select appropriate units.   |
| Drill Down to | Select where users go when they click a dashboard component: the full source report for the dashboard component; the source report filtered by the group, X-axis value, or legend entry they clicked; the detail page for a chart or table element, axis value, or legend entry; or a URL that you specify. (You can't use URLs that begin with "mailto:" or "javascript:".) Filtered and record detail page drill-down are disabled when viewing dashboard charts with more than 200 values. |

### SEE ALSO:

## Formatting Settings for Pie and Donut Dashboard Components

Data Settings for Dashboard Table Components

## USER PERMISSIONS

| To create dashboards:  | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|--|--|
|  | <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards |
| To edit and delete dashboards you created:                         | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|  | <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards |
| To edit and delete dashboards you created in public folders:       | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|  | <b>Enhanced Folder Sharing</b> Edit My Dashboards                              |
| To edit and delete dashboards you didn't create in public folders: | <b>Legacy Folder Sharing</b> Run Reports, Manage Dashboards AND View All Data  |
|  | <b>Enhanced Folder Sharing</b> Manage Dashboards in Public Folders             |
| To create, edit, and delete dynamic dashboards:                    | <b>Legacy Folder Sharing</b> Manage Dynamic Dashboards                         |

## EDITIONS

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

#### **Enhanced Folder Sharing**

Manage Dynamic Dashboards

A table component shows columns of data from a custom report in a dashboard. The settings on the Component Data tab control how a table component gets and manages the data it displays.

| Field         | Description   |
|---------------|---|
| Display Units | Choose a scale for displaying your chart values. For table components, this setting applies only to the first column. For best results, choose Auto to let Salesforce select appropriate units.   |
| Drill Down to | Select where users go when they click a dashboard component: the full source report for the dashboard component; the source report filtered by the group, X-axis value, or legend entry they clicked; the detail page for a chart or table element, axis value, or legend entry; or a URL that you specify. (You can't use URLs that begin with "mailto:" or "javascript:".) Filtered and record detail page drill-down are disabled when viewing dashboard charts with more than 200 values. |

#### SEE ALSO:

Formatting Settings for Dashboard Table Components

### **Visual Settings for Dashboard Chart Components**

Choose the type of chart that fits the data you are sharing, then apply the visual settings that will communicate the data most effectively.

#### IN THIS SECTION:

#### 1. Formatting Settings for Dashboard Bar Chart Components

Horizontal bar and vertical column charts are useful for comparing the values of one or more report groupings. Set the scale and sorting to help you make sense of the data you are displaying.

#### 2. Formatting Settings for Funnel Dashboard Components

Use color to show the status of a value through stages in a funnel chart.

#### 3. Formatting Settings for Dashboard Scatter Chart Components

Scatter charts are useful to show one or two groups of report data plus summaries. These settings for the scatter chart are available in the dashboard component editor under **Formatting**.

### 4. Formatting Settings for Dashboard Gauge Components

Set the breakpoints and colors on your gauge component to help users interpret the current value of the field you are tracking.

#### 5. Formatting Settings for Dashboard Line Chart Components

Line charts are useful for showing data over time. Use sorting and scale to help your users make sense of the data on your line chart.

## 6. Formatting Settings for Dashboard Metric Components

A metric component displays one value at a point in time. Use color to help users make sense of the data in the metric component.

### 7. Formatting Settings for Pie and Donut Dashboard Components

A pie chart is good for showing the relative shares of different quantities. Use the formatting tab to choose how to configure and label the divisions in your pie chart.

## 8. Formatting Settings for Dashboard Table Components

A table component shows columns of data from a custom report in a dashboard. You can use color and scale to help users interpret the report data the table displays.

Formatting Settings for Dashboard Bar Chart Components

## USER PERMISSIONS

| To create dashboards:  | Legacy Folder Sharing Run Reports AND Manage Dashboards  Enhanced Folder Sharing Run Reports AND Create and Customize Dashboards    |
|--|---|
| To edit and delete dashboards you created:                         | Legacy Folder Sharing Run Reports AND Manage Dashboards  Enhanced Folder Sharing Run Reports AND Create and Customize Dashboards    |
| To edit and delete dashboards you created in public folders:       | Legacy Folder Sharing Run Reports AND Manage Dashboards Enhanced Folder Sharing Edit My Dashboards                                  |
| To edit and delete dashboards you didn't create in public folders: | Legacy Folder Sharing Run Reports, Manage Dashboards AND View All Data  Enhanced Folder Sharing Manage Dashboards in Public Folders |
| To create, edit, and delete dynamic dashboards:                    | Legacy Folder Sharing Manage Dynamic Dashboards Enhanced Folder Sharing Manage Dynamic Dashboards                                   |

# EDITIONS

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

Horizontal bar and vertical column charts are useful for comparing the values of one or more report groupings. Set the scale and sorting to help you make sense of the data you are displaying.

| Setting                     | Description   |  |  |  |  |
|-----------------------------|---|--|--|--|--|
| Sort Rows By                | Choose a sorting element to determine what element you want displayed first in the horizontal axis of any horizontal chart or the vertical axis of any vertical chart. For a table, choose the sort order for the default two-column table to be ascending or descending by row labels or values. |  |  |  |  |
| Maximum Values<br>Displayed | Set the maximum number of elements to include in the top-level grouping of the horizontal axis of a horizontal chart, vertical axis of a vertical chart, or selected axis of a stacked bar chart. For a table, set the  |  |  |  |  |

| Setting                | Description   |
|------------------------|---|
|                        | maximum number of rows to include. For example, if you want to list only your top five salespeople, create an opportunity report that lists total opportunity amounts by owner and enter 5 in this field.   |
| Legend Position        | Choose a place to display the legend in relation to your chart.   |
| Show Chatter<br>Photos | Display Chatter photos for up to 20 records in a horizontal bar chart component whose source report is grouped by a user or group name field. If there are more than 20 records with photos, record names are shown instead of photos. Set Grouping Display to None to show photos. Set the Drill Down to option to Record Detail Page to take users directly to user profile or group pages when they click photos. Chatter must be enabled for photos to be displayed. Depending on your organization's setup, you may not see photos on tables and charts. |
| Show Values            | Display the values of individual records or groups on the chart. This only applies to certain chart types.  |
| Enable Hover           | Display values, labels, and percentages when hovering over charts. Hover details depend on chart type. Percentages apply to pie, donut, and funnel charts only. Hover is disabled if your chart has more than 200 data points.  |

Formatting Settings for Funnel Dashboard Components

# USER PERMISSIONS

| To create dashboards:  | Legacy Folder Sharing Run Reports AND Manage Dashboards Enhanced Folder Sharing Run Reports AND Create and Customize Dashboards     |
|--|---|
| To edit and delete dashboards you created:                         | Legacy Folder Sharing Run Reports AND Manage Dashboards Enhanced Folder Sharing Run Reports AND Create and Customize Dashboards     |
| To edit and delete dashboards you created in public folders:       | Legacy Folder Sharing Run Reports AND Manage Dashboards Enhanced Folder Sharing Edit My Dashboards                                  |
| To edit and delete dashboards you didn't create in public folders: | Legacy Folder Sharing Run Reports, Manage Dashboards AND View All Data  Enhanced Folder Sharing Manage Dashboards in Public Folders |
| To create, edit, and delete dynamic dashboards:                    | <b>Legacy Folder Sharing</b> Manage Dynamic Dashboards  |

# EDITIONS

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

## **Enhanced Folder Sharing**

Manage Dynamic Dashboards

Use color to show the status of a value through stages in a funnel chart.

| Setting                            | Description  |
|------------------------------------|--|
| Sort Rows By                       | Choose a sorting element to determine what element you want displayed first in the horizontal axis of any horizontal chart or the vertical axis of any vertical chart. For a table, choose the sort order for the default two-column table to be ascending or descending by row labels or values.  |
| Maximum Values<br>Displayed        | Set the maximum number of elements to include in the top-level grouping of the horizontal axis of a horizontal chart, vertical axis of a vertical chart, or selected axis of a stacked bar chart. For a table, set the maximum number of rows to include. For example, if you want to list only your top five salespeople, create an opportunity report that lists total opportunity amounts by owner and enter 5 in this field. |
| Legend Position                    | Choose a place to display the legend in relation to your chart.  |
| Combine Small Groups into "Others" | Click this link to create a custom table. The Maximum Values Displayed field is populated with the value you entered, and the first two columns are prepopulated with the default columns. To customize a table, the source report must be summary or matrix format and contain a chart.   |
| Show Values                        | Display the values of individual records or groups on the chart. This only applies to certain chart types.   |
| Show Segment %                     | Display the percentage value for each segment of funnel charts.  |
| Enable Hover                       | Display values, labels, and percentages when hovering over charts. Hover details depend on chart type. Percentages apply to pie, donut, and funnel charts only. Hover is disabled if your chart has more than 200 data points.   |

Formatting Settings for Dashboard Scatter Chart Components

# **USER PERMISSIONS**

| <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards |
|--|
|  |
| <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
| <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards |
| <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|  |

# EDITIONS

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

|  | <b>Enhanced Folder Sharing</b> Edit My Dashboards                             |
|--|---|
| To edit and delete dashboards you didn't create in public folders: | <b>Legacy Folder Sharing</b> Run Reports, Manage Dashboards AND View All Data |
|  | <b>Enhanced Folder Sharing</b> Manage Dashboards in Public Folders            |
| To create, edit, and delete dynamic dashboards:                    | <b>Legacy Folder Sharing</b> Manage Dynamic Dashboards                        |
|  | <b>Enhanced Folder Sharing</b> Manage Dynamic Dashboards                      |

Scatter charts are useful to show one or two groups of report data plus summaries. These settings for the scatter chart are available in the dashboard component editor under **Formatting**.

Tweak data displayed on the dashboard scatter chart using these settings.

| Setting                     | Description  |
|-----------------------------|--|
| Sort Rows By                | Currently sorting is unavailable.  |
| Maximum Values<br>Displayed | Set the maximum number of dots to show on the chart. When set to 5 for example, the chart shows 5 dots. These are the top 5 ascending values in the grouping used by the Plot By field of the scatter chart. |
| Axis Range                  | Keep automatic or choose manual to enter minimum and maximum values for the Y-axis range. If there are values outside the manual range, Y-axis automatically extends to include them.                        |
| Legend Position             | Choose a place to display the legend in relation to your chart.  |
| Show Details on Hover       | Display values or labels when hovering over charts.  |

Formatting Settings for Dashboard Gauge Components

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|----|---------------|---|--------|----|-------------------|------|-------------|--------|
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| u, | $\overline{}$ | - | $\sim$ |    |                   |      | $\cup$      |        |

| <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 | Available in:<br>Classic (not o   |
|--|---|
| Enhanced Folder Sharing Run Reports AND Create and Customize Dashboards        | Available in:<br>Only), <b>Profes</b><br><b>Enterprise</b> , <b>F</b>   |
| <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 | <b>Unlimited</b> , o  |
| <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards | Available in:<br>Folder Sharir<br>Enhanced Fo   |
|  | Run Reports AND Manage Dashboards  Enhanced Folder Sharing Run Reports AND Create and Customize Dashboards  Legacy Folder Sharing Run Reports AND Manage Dashboards  Enhanced Folder Sharing Run Reports AND Create and Customize |

# EDITIONS

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

| To edit and delete dashboards you created in public folders:       | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                |
|--|---|
|  | <b>Enhanced Folder Sharing</b> Edit My Dashboards                             |
| To edit and delete dashboards you didn't create in public folders: | <b>Legacy Folder Sharing</b> Run Reports, Manage Dashboards AND View All Data |
|  | <b>Enhanced Folder Sharing</b> Manage Dashboards in Public Folders            |
| To create, edit, and delete dynamic dashboards:                    | <b>Legacy Folder Sharing</b> Manage Dynamic Dashboards                        |
|  | <b>Enhanced Folder Sharing</b> Manage Dynamic Dashboards                      |

Set the breakpoints and colors on your gauge component to help users interpret the current value of the field you are tracking.

Optionally, set conditional highlighting by defining up to three value ranges and colors. You need to also set the minimum and maximum for the scale. You must set highlighting to follow a component and receive alerts in your Chatter feed when the value crosses a threshold.

| Setting               | Description   |
|-----------------------|---|
| Minimum               | The lowest value on the chart.  |
| Low Range<br>Color    | Select a color to represent the low range, up to the first breakpoint.  |
| Breakpoint 1          | The value that separates the middle and high range colors on the dashboard.   |
| Middle Range<br>Color | Select a color to represent the middle range, between the first and second breakpoints.   |
| Breakpoint 2          | Place the chart above or below your report.   |
| High Range<br>Color   | Select a color to represent the high range, beyond the second breakpoint.   |
| Maximum               | The highest value on the chart.   |
| Show %                | Display the percentage value for each wedge of pie and donut charts, or for each segment of funnel charts. On a gauge, show the percentage value of the point where the needle is pointing. |
| Show Total            | Display the total value for the chart. For a table, include the sum total for number and currency summary fields.   |

## SEE ALSO:

Modify a Dashboard Component in Salesforce Classic

Formatting Settings for Dashboard Line Chart Components

# USER PERMISSIONS

| To create dashboards:  | Legacy Folder Sharing Run Reports AND Manage Dashboards Enhanced Folder Sharing Run Reports AND Create and Customize Dashboards |
|--|---|
| To edit and delete dashboards you created:                         | Legacy Folder Sharing Run Reports AND Manage Dashboards Enhanced Folder Sharing Run Reports AND Create and Customize Dashboards |
| To edit and delete dashboards you created in public folders:       | Legacy Folder Sharing Run Reports AND Manage Dashboards Enhanced Folder Sharing Edit My Dashboards                              |
| To edit and delete dashboards you didn't create in public folders: | Legacy Folder Sharing Run Reports, Manage Dashboards AND View All Data  |
|  | Enhanced Folder Sharing  Manage Dashboards in Public Folders  |
| To create, edit, and delete dynamic dashboards:                    | <b>Legacy Folder Sharing</b> Manage Dynamic Dashboards  |
|  | <b>Enhanced Folder Sharing</b> Manage Dynamic Dashboards  |

# EDITIONS

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

Line charts are useful for showing data over time. Use sorting and scale to help your users make sense of the data on your line chart.

| Setting                     | Description  |
|-----------------------------|--|
| Sort Rows By                | Choose a sorting element to determine what element you want displayed first in the horizontal axis of any horizontal chart or the vertical axis of any vertical chart. For a table, choose the sort order for the default two-column table to be ascending or descending by row labels or values.  |
| Maximum Values<br>Displayed | Set the maximum number of elements to include in the top-level grouping of the horizontal axis of a horizontal chart, vertical axis of a vertical chart, or selected axis of a stacked bar chart. For a table, set the maximum number of rows to include. For example, if you want to list only your top five salespeople, create an opportunity report that lists total opportunity amounts by owner and enter 5 in this field. |
| Y-Axis Range                | Choose a manual or automatic axis range for the vertical axis of a bar, line, or column chart. If you choose manual, enter numbers for the minimum and maximum axis values to be displayed. If there are data points outside the range that you set, the axis automatically extends to include those values when you generate the chart.   |

| Setting         | Description  |
|-----------------|--|
| Legend Position | Choose a place to display the legend in relation to your chart.  |
| Enable Hover    | Display values, labels, and percentages when hovering over charts. Hover details depend on chart type. Percentages apply to pie, donut, and funnel charts only. Hover is disabled if your chart has more than 200 data points. |

Formatting Settings for Dashboard Metric Components

## USER PERMISSIONS

| To create dashboards:  | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|--|--|
|  | <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards |
| To edit and delete dashboards you created:                         | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|  | <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards |
| To edit and delete dashboards you created in public folders:       | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|  | <b>Enhanced Folder Sharing</b> Edit My Dashboards                              |
| To edit and delete dashboards you didn't create in public folders: | <b>Legacy Folder Sharing</b> Run Reports, Manage Dashboards AND View All Data  |
|  | <b>Enhanced Folder Sharing</b> Manage Dashboards in Public Folders             |
| To create, edit, and delete dynamic dashboards:                    | <b>Legacy Folder Sharing</b> Manage Dynamic Dashboards                         |
|  | <b>Enhanced Folder Sharing</b> Manage Dynamic Dashboards                       |

# EDITIONS

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

A metric component displays one value at a point in time. Use color to help users make sense of the data in the metric component.

Optionally, set conditional highlighting by defining up to three value ranges and colors. You must set highlighting to follow a component and receive alerts in your Chatter feed when the value crosses a threshold.



### Note:

• Enter metric labels directly on components by clicking the empty text field next to the grand total.

 Metric components placed directly above and below each other in a dashboard column are displayed together as a single component.

• If you don't define breakpoint values or if you leave them blank, alerts won't be sent for the component.

| Setting               | Description   |
|-----------------------|---|
| Low Range<br>Color    | Select a color to represent the low range, up to the first breakpoint.                  |
| Breakpoint 1          | The value that separates the middle and high range colors on the dashboard.             |
| Middle Range<br>Color | Select a color to represent the middle range, between the first and second breakpoints. |
| Breakpoint 2          | Place the chart above or below your report.   |
| High Range<br>Color   | Select a color to represent the high range, beyond the second breakpoint.               |

### SEE ALSO:

Modify a Dashboard Component in Salesforce Classic

Formatting Settings for Pie and Donut Dashboard Components

## USER PERMISSIONS

| To create dashboards:  | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|--|--|
|  | <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards |
| To edit and delete dashboards you created:                         | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|  | <b>Enhanced Folder Sharing</b> Run Reports AND Create and Customize Dashboards |
| To edit and delete dashboards you created in public folders:       | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                 |
|  | <b>Enhanced Folder Sharing</b> Edit My Dashboards                              |
| To edit and delete dashboards you didn't create in public folders: | <b>Legacy Folder Sharing</b> Run Reports, Manage Dashboards AND View All Data  |
|  | Enhanced Folder Sharing  |

## EDITIONS

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

Manage Dashboards in Public Folders

To create, edit, and delete dynamic dashboards:

Legacy Folder Sharing

Manage Dynamic Dashboards

**Enhanced Folder Sharing** 

Manage Dynamic Dashboards

A pie chart is good for showing the relative shares of different quantities. Use the formatting tab to choose how to configure and label the divisions in your pie chart.

| Setting                            | Description  |
|------------------------------------|--|
| Sort Rows By                       | Choose a sorting element to determine what element you want displayed first in the horizontal axis of any horizontal chart or the vertical axis of any vertical chart. For a table, choose the sort order for the default two-column table to be ascending or descending by row labels or values.  |
| Maximum Values<br>Displayed        | Set the maximum number of elements to include in the top-level grouping of the horizontal axis of a horizontal chart, vertical axis of a vertical chart, or selected axis of a stacked bar chart. For a table, set the maximum number of rows to include. For example, if you want to list only your top five salespeople, create an opportunity report that lists total opportunity amounts by owner and enter $5$ in this field. |
| Legend Position                    | Choose a place to display the legend in relation to your chart.  |
| Combine Small Groups into "Others" | Combine all groups less than or equal to 3% of the total into a single "Others" wedge or segment. Deselect to show all values individually on the chart. This only applies to pie, donut, and funnel charts. This option is on by default for pie and donut charts, and off for funnel.  |
| Show Values                        | Display the values of individual records or groups on the chart. This only applies to certain chart types.   |
| Show %                             | Display the percentage value for each wedge of pie and donut charts.   |
| Enable Hover                       | Display values, labels, and percentages when hovering over charts. Hover details depend on chart type. Percentages apply to pie, donut, and funnel charts only. Hover is disabled if your chart has more than 200 data points.   |
| Show Total                         | Display the total value for the chart. For a table, include the sum total for number and currency summary fields.  |

Formatting Settings for Dashboard Table Components

## **USER PERMISSIONS**

To create dashboards: Legacy Folder Sharing

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Run Reports AND Create and Customize

Dashboards

To edit and delete dashboards you created: Legacy Folder Sharing

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Run Reports AND Create and Customize

Dashboards

To edit and delete dashboards you created in public folders:

**Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Edit My Dashboards

To edit and delete dashboards you didn't create in public folders:

**Legacy Folder Sharing** 

Run Reports, Manage Dashboards AND

View All Data

**Enhanced Folder Sharing** 

Manage Dashboards in Public Folders

To create, edit, and delete dynamic dashboards:

**Legacy Folder Sharing** 

Manage Dynamic Dashboards

**Enhanced Folder Sharing** 

Manage Dynamic Dashboards

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

A table component shows columns of data from a custom report in a dashboard. You can use color and scale to help users interpret the report data the table displays.

You can use the default two-column table or create a custom table with up to four columns and totals.

The default two-column table uses the first grouping and summary field from the chart in the source report. If the report has no chart, default columns are based on the first grouping and summary field in the report.

Customized tables allow null values in the results. Default two-column tables do not.

To use a tabular report as the source report, Rows to Display must be set for that report.

Optionally, set conditional highlighting by defining up to three value ranges and colors. Highlighting only applies to the first summary field column in the table.

| Setting                     | Description  |
|-----------------------------|--|
| Sort Rows By                | Choose a sorting element to determine what element you want displayed first in the horizontal axis of any horizontal chart or the vertical axis of any vertical chart. For a table, choose the sort order for the default two-column table to be ascending or descending by row labels or values.  |
| Maximum Values<br>Displayed | Set the maximum number of elements to include in the top-level grouping of the horizontal axis of a horizontal chart, vertical axis of a vertical chart, or selected axis of a stacked bar chart. For a table, set the maximum number of rows to include. For example, if you want to list only your top five salespeople, create an opportunity report that lists total opportunity amounts by owner and enter $ 5 $ in this field.   |
| Show Chatter<br>Photos      | Display Chatter photos for up to 20 records in a table component whose source report is grouped by a user or group name field. If there are more than 20 records with photos, record names are shown instead of photos. Set Grouping Display to None to show photos. Set the Drill Down to option to Record Detail Page to take users directly to user profile or group pages when they click photos. Chatter must be enabled for photos to be displayed. Depending on your organization's setup, you may not see photos on tables and charts. |
| Customize Table             | Click this link to create a custom table. The Maximum Values Displayed field is populated with the value you entered, and the first two columns are prepopulated with the default columns. To customize a table, the source report must be summary or matrix format and contain a chart.   |
| Table Columns               | Specify up to four columns to display in the table. Available columns can be any grouping or summary field used in the chart. Update the report's chart or groupings to make more columns available for the dashboard table.   |
| Sort Ascending              | Sort the custom table in A-to-Z or smallest-to-largest order in a column. You can't sort on second-level groupings.  |
| Sort Descending             | Sort the custom table in Z-to-A or largest-to-smallest order in a column. You can't sort on second-level groupings.  |
| Show Total                  | Display the total value for the chart. For a table, include the sum total for number and currency summary fields.  |
| Reset Table to<br>Defaults  | Go back to the default two-column table.   |
| Low Range Color             | Select a color to represent the low range, up to the first breakpoint.   |
| Breakpoint 1                | The value that separates the low and middle range colors on the dashboard.   |
| Middle Range<br>Color       | Select a color to represent the middle range, between the first and second breakpoints.  |
| Breakpoint 2                | Breakpoint 2   |
| High Range Color            | Select a color to represent the high range, beyond the second breakpoint.  |

## SEE ALSO:

Modify a Dashboard Component in Salesforce Classic

## Edit Dashboards in Accessibility Mode in Salesforce Classic

## **USER PERMISSIONS**

To create dashboards: Legacy Folder Sharing

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Run Reports AND Create and Customize

Dashboards

To edit and delete dashboards you created: Legacy Folder Sharing

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Run Reports AND Create and Customize

Dashboards

To edit and delete dashboards you created in public folders:

**Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Edit My Dashboards

To edit and delete dashboards you didn't create in public folders:

**Legacy Folder Sharing** 

Run Reports, Manage Dashboards AND

View All Data

**Enhanced Folder Sharing** 

Manage Dashboards in Public Folders

To create, edit, and delete dynamic dashboards:

**Legacy Folder Sharing** 

Manage Dynamic Dashboards

**Enhanced Folder Sharing** 

Manage Dynamic Dashboards

In Salesforce Classic, you can edit dashboards in Accessibility mode.

(1) Important: This topic applies only if you're *not* using the dashboard builder. *Dashboard builder* is a drag-and-drop interface for creating and modifying dashboards.

A *dashboard* shows data from source reports as visual components, which can be charts, gauges, tables, metrics, or Visualforce pages. To customize a dashboard, view it and click **Edit**.

From the Dashboard Edit page, you can:

- See the running user for the dashboard in the Displaying data as field.
- Click **Dashboard Properties** to change the title, folder, running user, and more.
- Click **Done** to view the dashboard. All changes you make to the dashboard are saved as you make them.
- Click the **Delete** button to delete the entire dashboard.
- Click Add Component in any column.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

- Click Narrow, Medium, or Wide to set a column's width.
  - Note: If your component is a pie or donut chart with Show Values or Show Percentages enabled and Legend Position set to Right, the dashboard column width must be Wide for values and percentages to show on the dashboard.
- Click (I), (A), (D), and (D) to rearrange components in the dashboard.
- Click **Edit** to modify component properties like the component type, display units, source report, and more.
- Click **Delete** to remove a component from the dashboard. Deleted components don't get stored in the Recycle Bin.
- Click a dashboard component or its elements to drill down to the source report, filtered report, record detail page, or other URL. If you drill down on a filtered component, the dashboard filters are applied to the source report.

#### IN THIS SECTION:

- 1. Set Dashboard Properties in Accessibility Mode
- 2. Adding and Editing Dashboard Components in Accessibility Mode
- 3. Dashboard Component Properties in Accessibility Mode

#### SEE ALSO:

Adding and Editing Dashboard Components in Accessibility Mode Build a Salesforce Classic Dashboard Set Dashboard Properties in Accessibility Mode

Set Dashboard Properties in Accessibility Mode

(1) Important: This topic applies only if you're *not* using the dashboard builder. *Dashboard builder* is a drag-and-drop interface for creating and modifying dashboards.

To set dashboard properties:

1. Edit a dashboard and click Dashboard Properties.

#### **2.** Do the following:

- Enter a title and description for the dashboard.
- If you have the "Customize Application" permission, enter a unique name to be used by the API and managed packages.
- Select the number of columns for this dashboard. Each dashboard can have two or three columns.
  - (1) Important: Before removing a column, move its components to another column; otherwise, they may not be visible.
- Select a folder to store the dashboard. The folder should be accessible by all of your intended viewers
- Choose the Dashboard Running User to set visibility settings for the dashboard:
  - Select Run as specified user and set the Running User field to show all dashboard users the same data, regardless of their personal security settings. If you don't have "View All Data," you can only choose yourself.
  - Select Run as logged-in user to show data to each user according to his or her access level.
    - Set the View Edit Page as field to preview the dashboard edit page from the point of view of the selected user.
    - If you have the "View My Team's Dashboards" or "View All Data" permission, select Let authorized users change running user to enable those with permission to change the running user on the dashboard edit page. Users with "View My Team's Dashboards" can view the dashboard as any user below them in the role hierarchy. Users with "View All Data" can edit the dashboard and view it as any user in their organization.
- Under Component Settings, select the title color and size, text color, and background fade. If you don't want a gradient, choose the same color for both Starting Color and Ending Color.

#### 3. Click Save.

#### SEE ALSO:

Set Up Dynamic Dashboards in Salesforce Classic Choose a Running User in Salesforce Classic

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

## **USER PERMISSIONS**

To create dashboards:

Legacy Folder Sharing
Run Reports AND
Manage

Manage Dashboards

## Enhanced Folder Sharing

Run Reports AND Create and Customize Dashboards

To create, edit, and delete dynamic dashboards:

Legacy Folder Sharing

Manage Dynamic

Dashboards

## Enhanced Folder Sharing

Manage Dynamic Dashboards

To enable choosing a different running user for the dashboard:

 View My Team's Dashboards OR View All Data

Adding and Editing Dashboard Components in Accessibility Mode

## **USER PERMISSIONS**

To create dashboards: Legacy Folder Sharing

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Run Reports AND Create and Customize

Dashboards

To edit and delete dashboards you created: Legacy Folder Sharing

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Run Reports AND Create and Customize

Dashboards

To edit and delete dashboards you created in public folders:

**Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Edit My Dashboards

To edit and delete dashboards you didn't create in public folders:

**Legacy Folder Sharing** 

Run Reports, Manage Dashboards AND

View All Data

**Enhanced Folder Sharing** 

Manage Dashboards in Public Folders

To create, edit, and delete dynamic dashboards:

creating and modifying dashboards.

**Legacy Folder Sharing** 

Manage Dynamic Dashboards

**Enhanced Folder Sharing** 

Manage Dynamic Dashboards

Important: This topic applies only if you're *not* using the dashboard builder. *Dashboard builder* is a drag-and-drop interface for

A *dashboard* shows data from source reports as visual components, which can be charts, gauges, tables, metrics, or Visualforce pages. The components provide a snapshot of key metrics and performance indicators for your organization. Each dashboard can have up to 20 components.

To add a dashboard component:

- 1. Edit a dashboard.
- 2. Click Add Component from the top of any column and define component properties.
- 3. Choose the Custom Report to use for your dashboard. If you chose the Visualforce Page, or Custom S-Control component, select a page or s-control and enter the display height. You can show a joined report that includes a chart on a dashboard. Edit the joined report dashboard component and select Use chart as defined in the source report.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions



 Custom forecast and lead reports that you created using a standard report may not be available in the Custom Report list.

- To use a tabular report on a dashboard, first limit the row count, by setting the Rows to Display option, the sort column, and the order on the Select Criteria page of the report. You can't use gauge or metric components on dashboards using tabular reports.
- **4.** Enter the appropriate settings for the component type you selected: Choose settings on the Formatting tab for the component type you selected:
  - Formatting Settings for Dashboard Bar Chart Components
  - Formatting Settings for Dashboard Scatter Chart Components
  - Formatting Settings for Dashboard Gauge Components
  - Formatting Settings for Dashboard Metric Components
  - Formatting Settings for Dashboard Table Components

#### 5. Click Save.



**Note**: Metric components placed directly above and below each other in a dashboard column are displayed together as a single component.

SEE ALSO:

**Chart Types** 

Modify a Dashboard Component in Salesforce Classic

Dashboard Component Properties in Accessibility Mode

## USER PERMISSIONS

To create dashboards:

Legacy Folder Sharing
Run Reports AND Manage Dashboards
Enhanced Folder Sharing
Run Reports AND Create and Customize
Dashboards

To edit and delete dashboards you created:
Legacy Folder Sharing
Run Reports AND Manage Dashboards

Enhanced Folder Sharing

Run Reports AND Create and Customize

Dashboards

To edit and delete dashboards you created in public folders:

**Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing**Edit My Dashboards

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

| To edit and delete dashboards you didn't create in public folders: | C Legacy Folder Sharing Run Reports, Manage Dashboards AND View All Data |  |
|--|--|--|
|  | <b>Enhanced Folder Sharing</b> Manage Dashboards in Public Folders       |  |
| To create, edit, and delete dynamic dashboards:                    | <b>Legacy Folder Sharing</b> Manage Dynamic Dashboards                   |  |
|  | <b>Enhanced Folder Sharing</b> Manage Dynamic Dashboards                 |  |

(1) Important: This topic applies only if you're *not* using the dashboard builder. *Dashboard builder* is a drag-and-drop interface for creating and modifying dashboards.

The following settings may vary according to the component type you select.

| Field          | Description   |
|----------------|---|
| Component Type | Select vertical or horizontal bar chart, line chart, pie or donut chart, table, metric, gauge, Visualforce page, or custom s-control.   |
| Header         | Enter text to display at the top of the dashboard component.  |
| Footer         | Enter text to display at the bottom of the dashboard component.   |
| Title          | Enter a title to identify the dashboard component.  |
| Display Units  | Choose a scale for displaying your chart values. For table components, this setting applies only to the first column. For best results, choose Auto to let Salesforce select appropriate units.   |
| Drill Down to  | Select what happens when users click a dashboard component:   |
|                | Source Report—Takes the user to the full source report for the dashboard component.   |
|                | • Filtered Source Report—When users click individual groups, X-axis values, or legend entries, they are taken to the source report filtered by what they clicked.   |
|                | For example, if you had a stacked vertical column chart of opportunities grouped by stage, with months as the X-axis, you could click an individual stage in a bar, a month on the X-axis, or a legend entry for a stage to drill down to the filtered source report. (Not available for gauges, metrics, or tables.)                                     |
|                | <ul> <li>Record Detail Page—When users click chart or table elements, axis values, or legend entries,<br/>they are taken to the detail page for that record. You can only choose this option for tables<br/>and charts that use a source report grouped by record name, record owner, or feed post.<br/>(Not available for gauges or metrics.)</li> </ul> |
|                | • Other URL—Takes the user to the URL that you specify. You can't add URLs that begin with "mailto:" or "javascript:" to dashboard components.  |
|                | Note: Filtered and record detail page drill-down are disabled for dashboard charts with more than 200 values.   |

| Field          | Description  |
|----------------|--|
| Drill Down URL | Specify the URL that users go to when they click the dashboard component. Use this option to send users to another dashboard, report, record detail page, or other system that uses a Web interface. |

### SEE ALSO:

Modify a Dashboard Component in Salesforce Classic Dashboard Component Types

# Filter a Dashboard

# USER PERMISSIONS

| To add filters to dashboards you created:                            | <b>Legacy Folder Sharing</b> Run Reports AND Manage Dashboards                    |  |
|--|---|--|
|  | Enhanced Folder Sharing Run Reports AND Create and Customize Dashboards           |  |
| To add filters to dashboards you created in public folders:          | <b>Legacy Folder Sharing</b> Only available in Enhanced Folder Sharing            |  |
|  | Enhanced Folder Sharing Edit My Dashboards OR Manage Dashboards in Public Folders |  |
| To add filters to dashboards you didn't create:                      | <b>Legacy Folder Sharing</b> Run Reports, Manage Dashboards, and View All Data    |  |
|  | <b>Enhanced Folder Sharing</b> Manage Dashboards in Public Folders                |  |
| To add filters to dynamic dashboards:                                | <b>Legacy Folder Sharing</b> Manage Dynamic Dashboards                            |  |
|  | <b>Enhanced Folder Sharing</b> Manage Dynamic Dashboards                          |  |
| To view, refresh, and apply filters to dashboards you created:       | <b>Legacy Folder Sharing</b> Run Reports  |  |
|  | <b>Enhanced Folder Sharing</b> Run Reports  |  |
| To view, refresh, and apply filters to dashboards in public folders: | <b>Legacy Folder Sharing</b> Run Reports  |  |

# EDITIONS

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

#### **Enhanced Folder Sharing**

Run Reports and View Dashboards in Public Folders

Dashboard filters make it easy to provide different combinations of data from a single dashboard. You don't need separate dashboards for different sets of users — give each group a filter that makes sense for them. When you use a filter on a dashboard, the filtered view is shown again the next time you visit the dashboard.

Each filter has a name, a filter operator and one or more values. In Lightning Experience, each filter can have up to 50 options. In Salesforce Classic, each filter can have up to 10 options. Each dashboard can have up to 3 filters. Contact Salesforce to increase the filter options limit in Salesforce Classic. A maximum of 50 filter options is possible.

You can filter on picklists, lookups, and checkboxes, and on text, numeric, date, and datetime fields.

When you change filters on a dashboard, the dashboard shows previously cached data, if it exists. If no data exists, the dashboard fetches the latest. Either way, the dashboard's "Last Refreshed" date shows you the timestamp for the data you're viewing. Click **Refresh** to get the most recent data.



Note: As you prepare to filter dashboards, keep these dashboard filter limitations in mind.

- You can't add filters to dashboards that contain Visualforce or s-control components.
- It's not possible to filter on bucket fields. However, it is possible to use a report filtered on a bucket field on the dashboard page.
- Filters aren't applied when you schedule or email a dashboard.
- You can't filter data on a joined report in dashboard view or add a filter to a dashboard that only has joined reports.
- You can't use custom summary formulas in dashboard filters.

#### IN THIS SECTION:

#### 1. Add a Dashboard Filter

To create a dashboard filter, select a field that contains the type of information you want to filter, then define how the filter returns the data.

### 2. Apply a Dashboard Filter

Filter a dashboard to analyze the information interactively. After you filter a dashboard, the filtered view is preserved so that the next time you see the dashboard, data is filtered in the same view.

#### 3. Dashboard Filter Examples

Filters on a dashboard allow you to choose different views of data. After you filter a dashboard, the filtered view is preserved so that the next time you see the dashboard, data is filtered in the same view. Without dashboard filters, you'd have to create multiple dashboards, each with its own set of filtered reports.

### Add a Dashboard Filter

## **USER PERMISSIONS**

To add filters to dashboards you created:

### **Legacy Folder Sharing**

Run Reports AND Manage Dashboards

#### **Enhanced Folder Sharing**

Run Reports AND Create and Customize Dashboards

To add filters to dashboards you created in public folders:

## **Legacy Folder Sharing**

Only available in Enhanced Folder Sharing

### **Enhanced Folder Sharing**

Edit My Dashboards OR Manage Dashboards in Public Folders

To add filters to dashboards you didn't create:

### **Legacy Folder Sharing**

Run Reports, Manage Dashboards, and View All Data

## **Enhanced Folder Sharing**

Manage Dashboards in Public Folders

To add filters to dynamic dashboards:

## **Legacy Folder Sharing**

Manage Dynamic Dashboards

#### **Enhanced Folder Sharing**

Manage Dynamic Dashboards

## **EDITIONS**

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

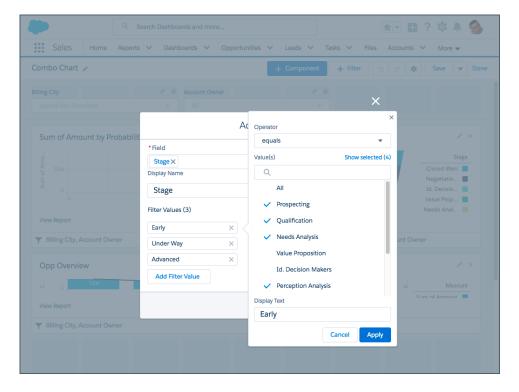
To create a dashboard filter, select a field that contains the type of information you want to filter, then define how the filter returns the data.

The field you select for the filter could have *equivalent fields*. Equivalent fields share the same underlying object as the field you select for the filter. You can use equivalent fields to filter components that don't have the exact field you selected for the filter, or to filter some components differently. For example, if you filter on the Account Owner field, equivalent fields include Opportunity Owner or Opportunity Created by, as all three are part of the User object.

When you edit a dashboard, you can see how each component is being filtered under the filtericon ( ) in Lightning Experience or the Filtered By in Salesforce Classic. If equivalent fields are available for a component, you can select a different field to filter the component.

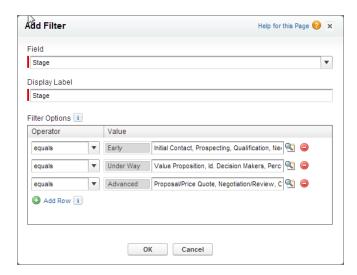
- 1. Edit a dashboard, then click + Filter in Lightning Experience or Add Filter in Salesforce Classic.
- 2. From the Field drop-down, select a field to filter on. The drop-down shows fields that can be used to filter all the dashboard's components. If there are equivalent fields for your selection, hover over the info icon (1) to see them.
- 3. Give the filter a Display Name to identify it. If the filter has many equivalent fields, we consider using a name that works for all components.
- **4.** Assign values to the filter.

In Lightning Experience, click **Add Filter Value**, choose an Operator, and set a Value. Optionally, set custom Display Text. Then, click **Apply**.



In Salesforce Classic, under Filter Options, select an operator and provide one or more values to filter by.

Use the Display Text field to give your filter a name. For example, on a sales dashboard, you might gather several stages of Opportunities into a group called "Early." This lets users quickly filter the dashboard to show only data relevant to deals that are in the early stages of development.



**5.** In Lightning Experience, click **Add**. In Salesforce Classic, click **OK**. If equivalent fields are available for a component, you can select which one to use to filter the component.

In Lightning Experience, to modify an existing filter, click the pencil icon ( 📝 ). To delete an existing filter, click the garbage icon ( 🝵 ).

In Salesforce Classic, to modify or delete an existing filter, from the filter drop-down, select **Edit Filter** or **Remove Filter**.

## Apply a Dashboard Filter

Filter a dashboard to analyze the information interactively. After you filter a dashboard, the filtered view is preserved so that the next time you see the dashboard, data is filtered in the same view.



Note: All components on the dashboard aren't necessarily filtered on the same field. The person who created or edited the dashboard specifies which field is used.

- 1. Open a dashboard.
- 2. Select an option from the filter drop-down. Each filter has one or more options you can choose to narrow your selection further.

## **EDITIONS**

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Group (View Only), Professional, **Enterprise**, Performance, Unlimited, and Developer Editions

Available in: both Legacy Folder Sharing and **Enhanced Folder Sharing** 

## **USER PERMISSIONS**

To view, refresh, and apply filters to dashboards you created:

**Legacy Folder Sharing Run Reports** 

**Enhanced Folder Sharing** 

**Run Reports** 

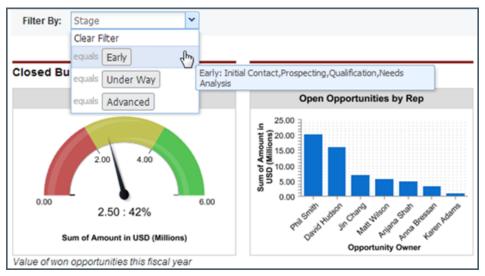
To view, refresh, and apply filters to dashboards in public folders:

**Legacy Folder Sharing Run Reports** 

## **Enhanced Folder Sharing**

Run Reports and View Dashboards in **Public Folders** 





3. To see data unfiltered, select Clear Filter or All from the filter drop-down.

## **Dashboard Filter Examples**

## **USER PERMISSIONS**

To add filters to dashboards you created:

### **Legacy Folder Sharing**

Run Reports AND Manage Dashboards

#### **Enhanced Folder Sharing**

Run Reports AND Create and Customize Dashboards

To add filters to dashboards you created in public folders:

## **Legacy Folder Sharing**

Only available in Enhanced Folder Sharing

### **Enhanced Folder Sharing**

Edit My Dashboards OR Manage Dashboards in Public Folders

## EDITIONS

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

To add filters to dashboards you didn't create:

#### **Legacy Folder Sharing**

Run Reports, Manage Dashboards, and View All Data

## **Enhanced Folder Sharing**

Manage Dashboards in Public Folders

To add filters to dynamic dashboards:

## **Legacy Folder Sharing**

Manage Dynamic Dashboards

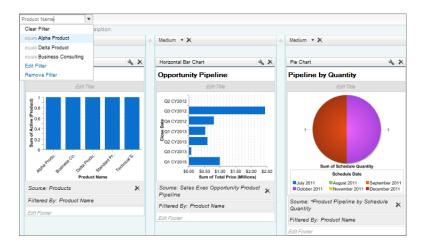
#### **Enhanced Folder Sharing**

Manage Dynamic Dashboards

Filters on a dashboard allow you to choose different views of data. After you filter a dashboard, the filtered view is preserved so that the next time you see the dashboard, data is filtered in the same view. Without dashboard filters, you'd have to create multiple dashboards, each with its own set of filtered reports.

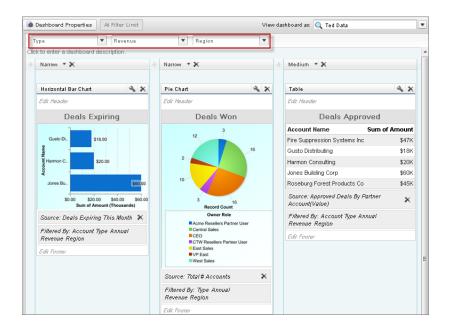
## Sales Performance by Products

Create a sales dashboard that lets viewers track sales performance by products. To do so, create a dashboard with key performance indicators, like closed revenue. Add a filter on the Product Name field so viewers can see performance by product.



### **Deals for Different Account Segments**

Show how different types of deals are performing across different account segments by creating a dashboard with two filters. Create a filter for Annual Revenue that contains several ranges that reflect how your organization segments accounts, then create a filter on opportunity Type, and finally add a filter to show deals by Region. Create this as a dynamic dashboard to let the entire sales organization use it: managers can use it to view the performance of their teams, while reps can use it to monitor their own performance.



# Dynamic Dashboards: Choose Who People View a Dashboard As

Say that your sales people can only view their own opportunities, but you'd like to review all opportunities closed in the last quarter. Create a dashboard and let people view the dashboard as you (or anyone else who can see all opportunities). When your sales people open the dashboard, they see info about all opportunities instead of only their opportunities. (Their data access in Salesforce remains unchanged. They can only see more data in your dashboard.)

Available in: both Salesforce Classic and Lightning Experience

Available in: Enterprise, Performance, Unlimited, and Developer Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

#### IN THIS SECTION:

#### Dynamic Dashboards: Choose Who People View a Dashboard as in Lightning Experience

Scope the data that dashboard readers see by specifying who they view the dashboard as. Remember, when you specify who people view the dashboard as you can give dashboard readers a broader view of data than they normally have. Be sure to control access to your dashboard by saving it in an appropriate dashboard folder.

## Choose a Running User in Salesforce Classic

Select a running user to specify which data to display in a dashboard.

## Dynamic Dashboards: Choose Who People View a Dashboard as in Lightning Experience



To create dashboards:

#### **Legacy Folder Sharing**

Run Reports AND Manage Dashboards

#### **Enhanced Folder Sharing**

Run Reports AND Create and Customize Dashboards

To edit and delete dashboards you created:

**Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing** 

Run Reports AND Create and Customize Dashboards

To edit and delete dashboards you created in public folders:

**Legacy Folder Sharing** 

Run Reports AND Manage Dashboards

**Enhanced Folder Sharing**Edit My Dashboards

To edit and delete dashboards you didn't create in public folders:

**Legacy Folder Sharing** 

Run Reports, Manage Dashboards AND View All Data

**Enhanced Folder Sharing** 

Manage Dashboards in Public Folders

To create, edit, and delete dynamic dashboards:

Legacy Folder Sharing

Manage Dynamic Dashboards

**Enhanced Folder Sharing** 

Manage Dynamic Dashboards

To specify who people view a Lightning Experience dashboard as:

**Legacy Folder Sharing** 

View My Team's Dashboards OR View All Data

**Enhanced Folder Sharing** 

View My Team's Dashboards OR View All Data

To enable dashboard readers to choose who they view the dashboard as:

**Legacy Folder Sharing** 

View My Team's Dashboards OR View All Data

**Enhanced Folder Sharing** 

View My Team's Dashboards OR View All Data

Scope the data that dashboard readers see by specifying who they view the dashboard as. Remember, when you specify who people view the dashboard as you can give dashboard readers a broader view of data than they normally have. Be sure to control access to your dashboard by saving it in an appropriate dashboard folder.

Available in: Lightning Experience

Available in: Enterprise, Performance, Unlimited, and Developer Editions

Available in: Enhanced Folder Sharing

People view dashboards as a specified user — whomever is listed above the dashboard next to "Viewing as." Specify who people view the dashboard as while creating or editing a dashboard.

If you have "View All Data," you can choose any user in your organization to be a running user of the dashboard. If you have "View My Team's Dashboards," you can choose any user below you in the role hierarchy.

- 1. Edit a dashboard.
- **2.** Open the Properties menu by clicking \*.
- 3. Under View Dashboard As, select who people view the dashboard as:
  - Me Dashboard readers see data in the dashboard according to your access to data.
     For example, if you can only see Opportunities in Canada, then dashboard readers only see data about Opportunities in Canada.
  - **Another person** Dashboard readers see data in the dashboard according to the data access level of whomever you specify. For example, if you choose someone who can see Opportunities from any country, then dashboard readers see data about Opportunities from all countries.
  - **The dashboard viewer** Dashboard readers see data as themselves, according to their own access to data. These types of dashboards are often called *dynamic dashboards*.

Your organization can have up to 5 dynamic dashboards for Enterprise Edition, 10 for Unlimited and Performance Edition, and 3 for Developer Edition. Dynamic dashboards aren't available in other editions. Additional dynamic dashboards may be available for purchase.

Take note of these dynamic dashboard limitations:

- Dynamic dashboards don't support following components.
- You can't save dynamic dashboards in private folders.
- You can't schedule refreshes for dynamic dashboards. They must be refreshed manually.
- **4.** Optionally, select **Let dashboard viewers choose whom they view the dashboard as** to enable a reader with appropriate user permissions to choose who they view the dashboard as. With the "View My Team's Dashboards" user permission, the reader can view the dashboard as themself or as anyone beneath them in the role hierarchy. With the "View All Data" user permission, the reader can view the dashboard as anyone.
- **5.** From the Properties window, click **Save**. Then, from the Dashboard Builder, click **Save** again.

When people open your dashboard, they see data as the person that you specified.

## Choose a Running User in Salesforce Classic

Select a running user to specify which data to display in a dashboard.

Each dashboard has a running user, whose security settings determine which data to display in a dashboard.



Note: The "Manage Dynamic Dashboards" permission, required for selecting a running user, isn't available in **Professional** Edition.

If you have "View All Data," you can choose any user in your organization to be a running user of the dashboard. If you have "View My Team's Dashboards," you can choose any user below you in the role hierarchy.



Note: Dashboard components that use Visualforce ignore the running user; content displays only if the viewing user has access to the Visualforce page. Other components in the dashboard are not affected.

Users with a Salesforce Platform or Salesforce Platform One user license can only view a dashboard if the dashboard running user also has the same license type. Users with user licenses that don't have full dashboard access can only see dashboards with running users of the same license type. Consider creating separate dashboards for users with different license types.

To select a dashboard's running user in Salesforce Classic:

- 1. Edit a dashboard.
- 2. Click the view dashboard as field.



Note: If you don't have "Manage Dynamic Dashboards" permission, just enter a running user and skip to the final step. Enter "\*" to see all available users.

#### **3.** Choose a running user setting.

- Run as specified user. The dashboard runs using the security settings of that single, specific user. All users with access to the dashboard see the same data, regardless of their own personal security settings. This approach is perfect for sharing the big picture across a hierarchy or motivating team members by showing peer performance within a team. If you don't have "View All Data," you can only choose yourself. If you have "View My Team's Dashboards," you can choose any user below you in the role hierarchy.
- Run as logged-in user. A dynamic dashboard runs using the security settings of the user viewing the dashboard. Each user sees the dashboard according to his or her own access level. This approach helps administrators share one common set of dashboard components to users with different levels of access.
- 4. Optionally, select Let authorized users change running user to enable those with permission to change the running user on the dashboard view page.
  - Users with "View My Team's Dashboards" can view the dashboard as any user below them in the role hierarchy.
  - Users with "View All Data" can edit the dashboard and view it as any user in their organization.
  - Users with "Enable Other User's Dashboard" can edit the dashboard if they have access to it, even if they aren't the running user and don't have "View All Data."
  - Note: If you have "View All Data" or "View My Team's Dashboards," you can preview the dashboard *edit* page as a different user, but you must select Let authorized users change running user to change the running user from the dashboard view page.

### 5. Click OK.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: Group (View Only), Professional, Enterprise, Performance, Unlimited, and Developer **Editions** 

Available in: both Legacy Folder Sharing and **Enhanced Folder Sharing** 

## **USER PERMISSIONS**

To enable choosing a different running user for the dashboard:

View My Team's Dashboards OR View All Data

- 6. In the View dashboard as field, enter a running user.
- 7. Save your dashboard.

#### IN THIS SECTION:

## Provide Individualized Views of a Dashboard in Salesforce Classic with Dynamic Dashboards

Dynamic dashboards enable each user to see the data they have access to. With a dynamic dashboard, you can control data visibility without having to create a separate dashboard, with its own running user and folder, for each level of data access.

## Set Up Dynamic Dashboards in Salesforce Classic

Create a folder to hold the dashboard and its underlying reports, then create the dashboard.

## Provide Individualized Views of a Dashboard in Salesforce Classic with Dynamic Dashboards

Dynamic dashboards enable each user to see the data they have access to. With a dynamic dashboard, you can control data visibility without having to create a separate dashboard, with its own running user and folder, for each level of data access.

Available in: Salesforce Classic

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

Administrators control access to dashboards by storing them in folders with certain visibility settings. Dashboard folders can be public, hidden, or restricted to groups, roles, or territories. If you have access to a folder, you can view its dashboards.

## **USER PERMISSIONS**

To create, edit, and delete dynamic dashboards:

Legacy Folder Sharing
Manage Dynamic
Dashboards

Enhanced Folder Sharing

Manage Dynamic Dashboards

Folders control access to the dashboard, but the running user determines access to data. The running user options are:

- Run as specified user. The dashboard runs using the security settings of that single, specific user. All users with access to the dashboard see the same data, regardless of their own personal security settings. This approach is perfect for sharing the big picture across a hierarchy or motivating team members by showing peer performance within a team. If you don't have "View All Data," you can only choose yourself. If you have "View My Team's Dashboards," you can choose any user below you in the role hierarchy.
- **Run as logged-in user.** A *dynamic dashboard* runs using the security settings of the user viewing the dashboard. Each user sees the dashboard according to his or her own access level. This approach helps administrators share one common set of dashboard components to users with different levels of access.

With a dynamic dashboard, you can control data visibility without having to create a separate dashboard, with its own running user and folder, for each level of data access. A single dynamic dashboard can display a standard set of metrics across all levels of your organization.

You can create up to three filters for each dynamic dashboard. Filtering dynamic dashboards gives administrators additional flexibility in creating dashboards. For example, you can create an organization-wide sales scorecard that contains sales rep and product filters. This allows individual sales managers to view their reps' performance collectively as well as individually. It also lets them view sales by product to understand which products specific reps are or aren't selling.

Managers with the "View My Team's Dashboards" or "View All Data" permission can set an option to preview the dashboard from the point of view of users under them in the role hierarchy.

Your organization can have up to 5 dynamic dashboards for Enterprise Edition, 10 for Unlimited and Performance Edition, and 3 for Developer Edition. Additional dynamic dashboards may be available for purchase.



#### Note:

- Dynamic dashboards don't support following components.
- You can't save dynamic dashboards to personal folders.
- You can't schedule refreshes for dynamic dashboards. They must be refreshed manually.

#### Example Business Scenario

Let's say that your opportunity team consists of one vice president, four sales managers, and 40 sales reps—10 reps per manager. You've been asked to create dashboards that display the following metrics, restricted by role and hierarchy:

| Role          | Total Bookings | Close Rates by Competitor | Number of Activities by<br>Meeting Type |
|---------------|----------------|---------------------------|---|
| Sales Rep     | ✓              |                           | ✓                                       |
| Sales Manager | ✓              | <b>✓</b>                  |   |
| VP of Sales   | ✓              | <b>~</b>                  |   |

Sales reps should only see their own data; managers should only see data for the reps they manage; and the VP should see data across the entire team. In this scenario, you'd typically have to create 45 different dashboards—one for every single person. You'd also have to create multiple folders to manage access rights.

With dynamic dashboards, you can create just two dashboards and store them in a single folder:

- Create a dynamic dashboard for sales reps with the following components:
  - A gauge of total bookings
  - A table of activities by meeting type
- Create a dynamic dashboard for managers and the VP with the following components:
  - A gauge of total bookings
  - A column chart of close rates by competitor
- Optionally, create filters that let viewers further refine their dashboard views. For example, create a filter on key accounts to let viewers focus on bookings, activities, and competitive threats for each account.

All users only see data that they can access. Sales reps see their own bookings and activities. Managers see bookings and close rates for the reps they manage. The VP sees bookings and close rates for the whole team. Because the metrics are the same for managers and the VP, you can use the same dynamic dashboard for both roles. The dynamic dashboards feature reduces the number of required dashboards from 45 to two!

#### SEE ALSO:

Filter a Dashboard

Build a Salesforce Classic Dashboard

Set Up Dynamic Dashboards in Salesforce Classic

## Set Up Dynamic Dashboards in Salesforce Classic

Create a folder to hold the dashboard and its underlying reports, then create the dashboard.

Available in: Salesforce Classic

Available in: Enterprise, Performance, Unlimited, and Developer Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

Your organization can have up to 5 dynamic dashboards for Enterprise Edition, 10 for Unlimited and Performance Edition, and 3 for Developer Edition. Additional dynamic dashboards may be available for purchase.

Take note of these dynamic dashboard limitations:

- Dynamic dashboards don't support following components.
- You can't save dynamic dashboards in private folders.
- You can't schedule refreshes for dynamic dashboards. They must be refreshed manually.
- 1. Create folders accessible to all dashboard viewers to store dynamic dashboards and corresponding component source reports.
- 2. From the Dashboards tab, create a new dashboard or edit an existing one.
- 3. Click the button next to the View dashboard as field.
  - Note: If you don't have "Manage Dynamic Dashboards" permission, just enter a running user and skip to the final step. Enter "\*" to see all available users.
- 4. Select Run as logged-in user.
- **5.** Optionally, select Let authorized users change running user to enable those with permission to change the running user on the dashboard view page.
  - Users with "View My Team's Dashboards" can view the dashboard as any user below them in the role hierarchy.
  - Users with "View All Data" can edit the dashboard and view it as any user in their organization.
  - Users with "Enable Other User's Dashboard" can edit the dashboard if they have access to it, even if they aren't the running user and don't have "View All Data."
- 6. Click OK.
- 7. In the View dashboard as field, enter a running user.
- 8. Save your dashboard.
- **9.** Set the appropriate Show option on the report run page. For example, if you choose "My Team's Opportunities," each dynamic dashboard viewer can see all opportunities for the team.
- ? Tip: To avoid restricting the dashboard's view of the data:
  - Make sure advanced filters don't include specific record owners (for example, *Opportunity Owner equals Frank Smith*).

## **USER PERMISSIONS**

To create, edit, and delete dynamic dashboards:

Legacy Folder Sharing

Manage Dynamic

Dashboards

### Enhanced Folder Sharing

Manage Dynamic Dashboards

• Don't click Save Hierarchy Level when saving opportunity reports.

#### SEE ALSO:

Add a Dashboard Filter

Provide Individualized Views of a Dashboard in Salesforce Classic with Dynamic Dashboards Choose a Running User in Salesforce Classic

## Subscribe to or Schedule Dashboards

Set up automatic dashboard refreshes and receive refreshed dashboard results by email on a schedule that you set. If you start your week by reviewing your Sales Overview dashboard, expedite your morning by subscribing to the dashboard. After subscribing, you can have it automatically refreshed and in your email inbox each Monday morning at 8:00 AM.

Note: Users with Salesforce Platform User Licenses can't schedule or subscribe to dashboards.

Watch a video: Subscribe to Reports and Dashboards (Lightning Experience)

#### IN THIS SECTION:

### Subscribe to Dashboards in Lightning Experience

Subscribe to up to 5 dashboards to refresh them on a schedule that you set (daily, weekly, or monthly), and receive the refreshed dashboards results by email. You can subscribe to dashboards yourself and also add other people as subscribers. Others you add must have view access to the dashboard.

#### Schedule a Dashboard Refresh in Salesforce Classic

Schedule dashboards to refresh them on a schedule that you set (daily, weekly, or monthly), and receive refreshed dashboards results by email.

# **EDITIONS**

Available in: both Salesforce Classic and Lightning Experience

Available in: Essentials, Group, Professional, Enterprise, Performance, Unlimited, and Developer Editions

## Subscribe to Dashboards in Lightning Experience

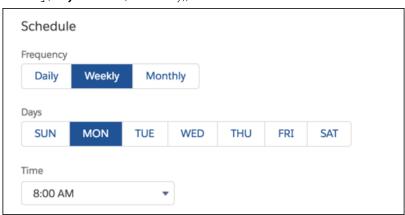
Subscribe to up to 5 dashboards to refresh them on a schedule that you set (daily, weekly, or monthly), and receive the refreshed dashboards results by email. You can subscribe to dashboards yourself and also add other people as subscribers. Others you add must have view access to the dashboard.

Watch a video: Subscribe to Reports and Dashboards (Lightning Experience)

For example, suppose every Monday morning you arrive at your desk and run your case overview dashboard to determine case priority. Instead of manually refreshing the dashboard, you can subscribe to it and have it emailed to you and anyone else you specify every Monday morning at 8:00am.

- 1. To set up dashboard subscriptions, do either of the following on the Dashboards page:
  - Open the dashboard, and then click **Subscribe**. In the dialog box, click **Select Folder**.
  - Find the dashboard you want to subscribe to and select the **Subscribe** row level action. (If you have customized columns on the page, you might have to scroll to the right to see the row-level action arrow .)
- 2. From the Edit Subscription modal, set the subscription schedule.

For example, to refresh a dashboard each Monday morning at 8:00am, set **Frequency** to *Weekly*, **Days** to *MON* (for Monday), and **Time** to *8:00 AM*.



**3.** Under Send To, notice that you are already selected as a subscriber.

To change the subscriber list:

- a. Click Select people.
- **b.** Click the entry area to display the search box.
- **c.** Start typing to see matching entries, and make a selection.
- d. Add additional names as needed.

## **EDITIONS**

Available in: Lightning Experience

Available in: Essentials, Group, Professional, Enterprise, Performance, Unlimited, and Developer Editions

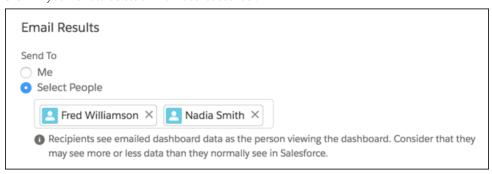
## **USER PERMISSIONS**

To subscribe to dashboards:

Subscribe to Dashboards

> (To add other users as recipients) Subscribe to Dashboards: Add Recipients

e. Click X if you want to delete an individual subscriber.



#### 4. Click Save.

The dashboard subscription starts. You and any other designated subscribers begin receiving refreshed dashboard results by email according to the schedule you set. On the Dashboard page, the Subscribe column has a checkmark for each dashboard that has subscriptions.

To unsubscribe, open the Edit Subscription window by clicking **Subscribe** again. Then, click **Unsubscribe**.



Note: The subscription recipients aren't listed on the dashboard subscription emails. .

As you subscribe to dashboards, take note of these notes, considerations, and limitations:

- Each person can subscribe to up to 5 dashboards.
- You can subscribe to filtered dashboards, but dashboard filters are never applied to emailed dashboards. When you open the email, the dashboard is displayed unfiltered.
- Dashboards that are configured to display data as **The dashboard viewer** under **View Dashboard As** settings in **Dashboard Properties** don't support subscriptions. You can't subscribe to them.
- In the email to subscribers, the 'From' address is taken from My Email Settings. If no address is specified in My Email settings, the 'From' address is taken from the User object.

### Schedule a Dashboard Refresh in Salesforce Classic

Schedule dashboards to refresh them on a schedule that you set (daily, weekly, or monthly), and receive refreshed dashboards results by email.



#### Note:

- Users with the "View Setup and Configuration" permission can view all the dashboards scheduled to refresh for your organization on the All Scheduled Jobs page. To view the All Scheduled Jobs page, from Setup, enter Scheduled Jobs in the Quick Find box, then select Scheduled Jobs. Users with "Modify all Data" permission can click Del next to a specific scheduled dashboard refresh to permanently delete all instances of the scheduled refresh.
- Users with Salesforce Platform User Licenses can't subscribe to dashboards.

You can also set up Salesforce to send an email with an HTML version of the dashboard when the refresh completes. For email applications that don't support HTML, the email includes text and a link to the dashboard.

- 1. On the Dashboards tab, select a dashboard using the View Dashboard field.
- 2. Click Refresh and choose Schedule Refresh

Filters aren't applied when you schedule or email a dashboard.

Each dashboard has a *running user*, whose security settings determine which data to display in a dashboard.

- Note: If the running user becomes inactive, the dashboard doesn't run.
- **3.** Select notification settings.
  - Click To me to send an email to your user's address.
  - Click To others... to send an email to additional Salesforce users.



**Note**: Portal users receive report and dashboard refresh email notifications when the Allow Reports and Dashboards to Be Sent to Portal Users option is enabled.

- Dashboard refresh notifications may not display properly in Outlook 2007.
- In HTML-formatted dashboard refresh notifications, users can click the name of the dashboard to log in to Salesforce and view the dashboard.
- To send a dashboard refresh notification to other users, store the dashboard in a public folder with access granted to others. Other users can't access dashboards in your personal folders. To add a dashboard to a public folder, edit the dashboard properties.
- Users can click components in a dashboard refresh notification to view the source report in Salesforce.
- Dashboard components that include Visualforce pages and s-controls may not display in dashboard refresh notifications. Users must view them in Salesforce.
- Dashboard refresh notifications can be viewed offline in email clients.
- If a dashboard has filters, only the unfiltered version is emailed.
- By default, Salesforce sends images in dashboard emails as .png (Portable Network Graphic) files, which are not supported in Lotus Notes. When you enable the Use Images Compatible with Lotus Notes in Dashboard Emails > option, Salesforce uses .jpg images, which Lotus Notes supports, when sending dashboard emails. The "Schedule Dashboard" permission is required to view this option.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Enterprise**, **Performance**, and **Unlimited** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

## **USER PERMISSIONS**

To schedule and email a dashboard refresh:

Legacy Folder Sharing
Schedule
Dashboards

Enhanced Folder Sharing

Schedule Dashboards

To delete the schedule to refresh a dashboard:

Legacy Folder Sharing

Modify All Data

Enhanced Folder Sharing Modify All Data



Note: Dashboard emails that contain images compatible with Lotus Notes are substantially larger and the image quality can be lower.

#### 4. Schedule the refresh.

a. Set the Frequency field.

Click the Daily, Weekly, or Monthly fields to show more options.

The total number and frequency of your scheduled dashboard refreshes depends on your Salesforce edition. Enterprise, Unlimited, and Performance Editions can have up to 200 scheduled dashboard refreshes. Unlimited and Performance Edition users can schedule up to two dashboard refreshes an hour per day. Enterprise Edition users can schedule up to one dashboard refresh an hour per day. Additional scheduled dashboards may be available for purchase. Contact your Salesforce representative for information.

**b.** Specify dates in the Start and End fields.

Dashboards refresh in the time zone of the user who scheduled the refresh. For example, if the Time Zone field on your user record is set to Pacific Standard Time (PST), and you schedule a dashboard to refresh every day at 2:00 PM, then the dashboard will refresh every day between 2:00 PM and 2:29 PM PST. If you view and save a schedule in a time zone different from the one in which it was previously scheduled, the time slot could potentially change.

c. Under Preferred Start Time, click Find available options... to choose a time.

The dashboard refresh runs within 30 minutes of your preferred start time. For example, if you select 2:00 PM, the refresh may happen any time between 2:00 PM and 2:29 PM, depending on availability.



Note: Your preferred start time may not be available if other users have already selected it.

- If you schedule a dashboard to refresh on a specific day of every month, it only refreshes on months that have that specific day. For example, if you schedule a refresh for the 31st of every month, the dashboard won't refresh on 30-day months. To refresh on the last day of every month, choose "Last" from the On day of every month drop-down list.
- Dashboards won't refresh as scheduled if the running user doesn't have access to the dashboard folder.
- If a dashboard has filters, only the unfiltered version is refreshed.
- You can't schedule refreshes for dynamic dashboards. They must be refreshed manually.

#### 5. Click Save.

To delete a scheduled dashboard refresh, click **Refresh** > **Schedule Refresh** > **Unschedule Dashboard**.

The scheduled refresh is permanently deleted, and not sent to the Recycle Bin. Deleting the scheduled refresh does not affect the dashboard itself.

SEE ALSO:

Apply a Dashboard Filter Refresh Dashboard Data

## Link from Dashboard Components in Lightning Experience

A sales overview dashboard is a great way for teams to collaborate on opportunities because it provides a complete picture of your pipeline. Dashboard components already link to source reports, so you can get more details, but what if you're ready to take action?

#### IN THIS SECTION:

1. Link a Dashboard Component to a Website or Salesforce Record

After giving dashboard readers insights about their business, drive them to take the next step by providing one-click access to Salesforce records or websites.

2. Visit a Link from a Dashboard Component

Dashboard builders can link dashboard components to Salesforce records or other websites. Visit a link to start taking action on dashboard insights!

## Link a Dashboard Component to a Website or Salesforce Record

After giving dashboard readers insights about their business, drive them to take the next step by providing one-click access to Salesforce records or websites.

#### **User Permissions Needed**

| To link from dashboard components:                       | Create and Customize Dashboards |
|--|---------------------------------|
| To link from dashboard components in Dynamic Dashboards: | Manage Dynamic Dashboards       |

## EDITIONS

Available in: Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

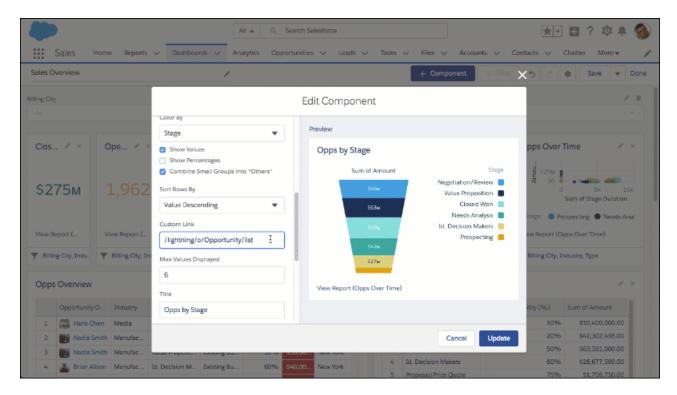
Available in: Enhanced Folder Sharing

## **EDITIONS**

Available in: Lightning Experience

Available in: **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing



Linking from dashboard components helps readers turn insights into actions.

- 1. Add a new dashboard component by clicking + Component, or edit an existing one by clicking the pencil icon ( ) on the component.
- 2. From the Add Component or Edit Component menu, in **Custom Link**, enter a link destination.
  - Important: Depending on whether you link to a destination in Salesforce or to another website, the destination you enter in **Custom Link** must follow certain conventions. Unless you append https://orhttp://orwww.,the destination you enter gets pasted to the end of your Salesforce org's domain (for example, https://nal.salesforce.com/). If you enter abc, then your component links to https://nal.salesforce.com/abc. Appending https://orhttp://orwww.lets Salesforce recognize that you intend to link to a specific website.

This means that linking to heroku.com won't take you to the Heroku website. Instead, it'll navigate you to https://nal.salesforce.com/heroku.com. To navigate to the Heroku website, enter https://www.heroku.com/.

#### **Example: Link Somewhere Inside Salesforce**

To link to the Opportunities tab, enter /lightning/o/Opportunity/list.

#### **Example: Link to Another Website**

To link to Heroku dot com, as described in the prior note, enter https://www.heroku.com/.

- 3. If adding a new component, click **Add**. Or, if editing an existing component, click **Update**.
- 4. Click Save.

After dashboard viewers expand your linked component, they can visit the link by clicking [at].

### Visit a Link from a Dashboard Component

Dashboard builders can link dashboard components to Salesforce records or other websites. Visit a link to start taking action on dashboard insights!

#### **User Permissions Needed**

To visit a dashboard component link: Run Reports

- 1. Open a dashboard.
- 2. Expand a component. Hover over a component and click [3]. A larger version of the dashboard component overlays the dashboard.
- 3. Visit the link. From the expanded component, click ...

The linked component's destination opens.

# **EDITIONS**

Available in: Lightning Experience

Available in: Professional, Enterprise, Performance, **Unlimited**, and **Developer** 

**Editions** 

Available in: Enhanced Folder Sharing

### Work with Dashboards

Click on a dashboard's name to run it. Dashboard charts are interactive, so be sure to hover and click on them to get more info! From refreshing dashboard data to sharing dashboard components, there are lots of ways to use dashboards to keep yourself and your team informed and collaborating.

- Users with a Salesforce Platform or Salesforce Platform One user license can only view a dashboard if the dashboard running user also has the same license type. Users with user licenses that don't have full dashboard access can only see dashboards with running users of the same license type. Consider creating separate dashboards for users with different license types.
- Dashboards in **Group** Edition organizations are view-only.

#### IN THIS SECTION:

1. Refresh Dashboard Data

Click **Refresh** to load the latest data into the dashboard. The data is as current as the date and time displayed after As of... at the top right corner of the dashboard.

- 2. Expand Dashboard Components to See a Larger Version in Lightning Experience Sometimes a chart or table is just a little too small. Open it in a window so you can see all the details.
- 3. Share an Image of a Dashboard Component on Chatter in Lightning Experience Start the conversation by sharing images of dashboard components on Chatter.
- 4. View Filtered Source Reports in Lightning Experience

Want to know more about the data shown in a dashboard chart? Click a chart segment, axis label, or legend to view a filtered version of the source report.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: Group (View Only), Professional, Enterprise, Performance, **Unlimited**, and **Developer Fditions** 

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

#### Refresh Dashboard Data

Click **Refresh** to load the latest data into the dashboard. The data is as current as the date and time displayed after As of... at the top right corner of the dashboard.

1. Click **Refresh** to replenish your dashboard with the most recent data. When dashboard data is being refreshed, the **Refresh** button changes to **Refreshing...**You can leave the dashboard and do other things in Salesforce while the data refreshes. When the dashboard has finished refreshing, Salesforce 1 tells you that the dashboard is ready through the right-hand notification panel. Since push notifications aren't enabled for dashboard refreshes, you're notified only in the app and not in through email.



Tip: If your dashboard data doesn't refresh after ten minutes, the refresh automatically stops. If necessary, click **Refresh** again.

When you refresh a dashboard, the dashboard data refreshes for anyone else in your organization that has access to that dashboard. Additional refreshes submitted during a refresh and up to one minute after the completion of a refresh are ignored; users view the most current data.

When you change filters on a dashboard, the dashboard shows previously cached data, if it exists. If no data exists, the dashboard fetches the latest. Either way, the dashboard's "Last Refreshed" date shows you the timestamp for the data you're viewing. Click **Refresh** to get the most recent data.

## **EDITIONS**

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group** (View Only), Professional, Enterprise, Performance, **Unlimited**, and **Developer Editions** 

Available in: both Legacy Folder Sharing and **Enhanced Folder Sharing** 

### **USER PERMISSIONS**

To view dashboards:

Run Reports AND access to dashboard folder

### Expand Dashboard Components to See a Larger Version in Lightning Experience

Sometimes a chart or table is just a little too small. Open it in a window so you can see all the details.

- 1. Open a dashboard.
- 2. Hover over a component and click 🔣.

A larger version of the dashboard component overlays the dashboard. Optionally, click the left and right arrows to cycle through expanded versions of the dashboard's components.

## **EDITIONS**

Available in: Lightning Experience

Available in: Group (View Only), Professional, **Enterprise**, Performance, **Unlimited**, and **Developer Editions** 

Available in: both Legacy Folder Sharing and **Enhanced Folder Sharing** 

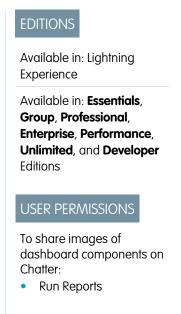
#### **USER PERMISSIONS**

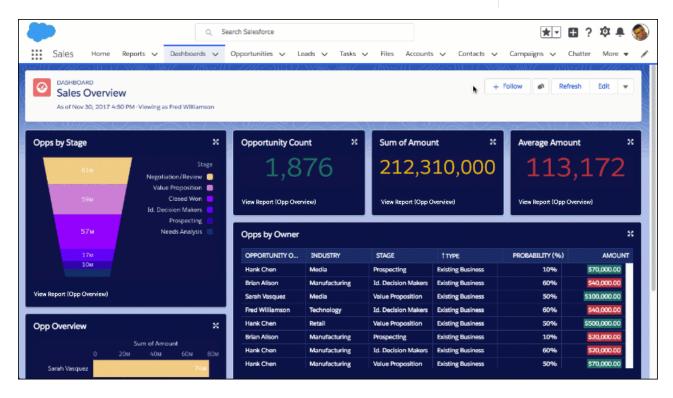
To expand dashboard components:

**Run Reports** 

## Share an Image of a Dashboard Component on Chatter in Lightning Experience

Start the conversation by sharing images of dashboard components on Chatter.





There are many reasons to share images of dashboard components. Request help with aging cases, ask a question about the pipeline, or congratulate the team for making quota!

- 1. View a dashboard.
- 2. Find the component you want to share, and expand it by clicking [X].

**4.** Compose your post. You can @mention people and groups, and format with rich text. Go ahead and make your post as **bold** as you like!

#### **5.** Click **Share**.

The dashboard component image posts to the Dashboard feed. To view the dashboard feed, and your post, click



**Note**: If you can't post images of dashboard components on Chatter, ask your Salesforce admin to turn on feed tracking for dashboards. For more information, see Customize Chatter Feed Tracking in Salesforce Help.

This topic is about sharing images of dashboard components in Lightning Experience. For information about sharing images of dashboard components in Salesforce Classic, see Post Snapshots of Dashboard Components to Chatter in Salesforce Help.

### View Filtered Source Reports in Lightning Experience

Want to know more about the data shown in a dashboard chart? Click a chart segment, axis label, or legend to view a filtered version of the source report.

## **EDITIONS**

Available in: Lightning Experience

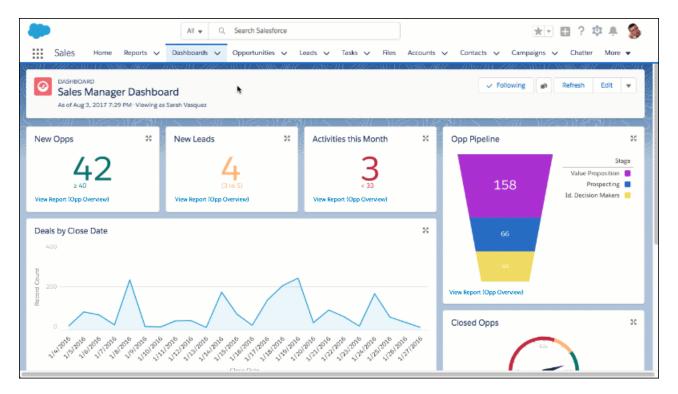
Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

## **USER PERMISSIONS**

To view filtered source reports:

Run Reports



For example, click the Prospecting segment of an opportunity pipeline funnel chart to open and filter the source report by Stage equals Prospecting.

- 1. Open a dashboard.
- 2. Click a chart segment, axis label, or legend.

The source report opens. The segment you click (plus any applied dashboard filters) appear as linked filters when the report opens. To open the filtered source report in a new tab, hold down **CTRL** on Windows® or **Command** on MacOS® and click a chart segment. If a chart displays one of these types of data, then the source report won't filter:

- Encrypted strings
- Dates fields with month-in-year or day-in-month granularity

## Organize Dashboards

Keep your dashboards at your fingertips by embedding them around Salesforce, printing them, or deleting dashboards that you don't need anymore.

#### IN THIS SECTION:

Embed Dashboards on the Home Tab and in Lightning Apps
 Embed dashboards to surface insights right where people work.

2. Print a Dashboard

Print dashboards using your browser's print option.

3. Delete a Dashboard

It's a good idea to delete dashboards that you no longer need.

4. Install the CRM Sample Dashboards from AppExchange

Use these dashboards from the AppExchange as a starting point for building dashboards that meet your business needs.

### Embed Dashboards on the Home Tab and in Lightning Apps

Embed dashboards to surface insights right where people work.

For example, add the Sales Pipeline dashboard to the Home tab to give your sales team the information they need when they log in to Salesforce.

Embedded dashboards are fully interactive. Refresh them, apply filters, and click chart segments to drill into filtered reports.

Dashboards need space to display charts and tables. If an embedded dashboard is squished into too small a space, then a collapsed version displays instead of the full dashboard. The collapsed version links back to the full dashboard.

### EDITIONS

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## **EDITIONS**

Available in: Lightning Experience

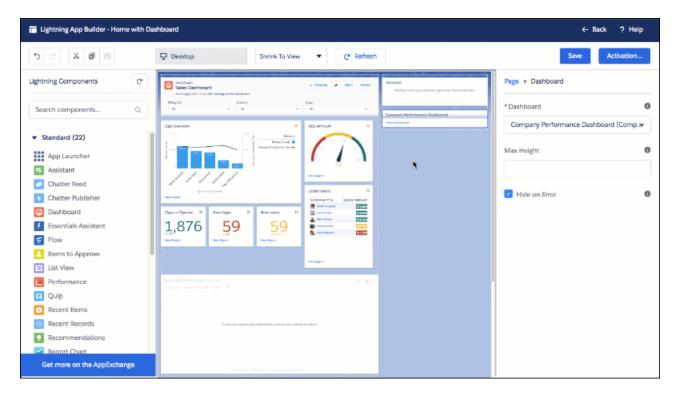
Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

### **USER PERMISSIONS**

To embed dashboards on the Lightning Home tab and in Lightning apps:

Customize Application



- 1. From Setup, enter App Builder in the Quick Find box, then select Lightning App Builder.
- 2. Click New.
- 3. Choose where to embed the dashboard. (Record pages don't support embedded dashboards.)
  - To embed a dashboard on an app page, select App Page.
  - To embed a dashboard on the Home tab, select Home Page.

#### Click Next

- **4.** Give your app page or home tab layout a label. Then, click **Next**.
- **5.** Choose a layout. Then, click **Finish**.
- **6.** Drag and drop the **Dashboard** standard component into place.
- 7. From the Dashboard drop-down list, choose a dashboard to embed.
- 8. Optionally, specify a maximum height and choose to show or hide the dashboard if an error prevents it from loading.
- 9. Click Save.
- 10. Click Activate.

Go visit the newly updated Home tab, or your Lightning app, and marvel at the embedded dashboard!

### Print a Dashboard

Print dashboards using your browser's print option.

• Set the paper orientation to print in landscape format so that it is wide enough for all three columns of dashboard components.

• If necessary, resize your columns and remove the browser-imposed headers and footers.

# EDITIONS

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

## USER PERMISSIONS

To print dashboards:

 Run Reports AND access to dashboard folder

#### Delete a Dashboard

It's a good idea to delete dashboards that you no longer need.

Deleting a dashboard also deletes the components within it. It doesn't delete the custom reports used by the components.

Deleted dashboards are moved to the Recycle Bin.

To delete a dashboard in Lightning Experience, open the dashboard and then click **Delete**.

To delete a dashboard in Salesforce Classic:

- 1. Click the Dashboards tab.
- 2. Click Go To Dashboards List.
- **3.** Choose the folder where the dashboard is stored.
- **4.** Click **Del** next to the name of the dashboard.

## EDITIONS

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

### **USER PERMISSIONS**

To delete dashboards:

Legacy Folder Sharing Run Reports AND

Manage Dashboards

### Enhanced Folder Sharing

Run Reports AND Create and Customize Dashboards (If the dashboard is in a private folder.)

Edit My Dashboards (If the dashboard is in a shared folder.)

To delete dashboards created by another user:

#### Legacy Folder Sharing

Run Reports, Manage Dashboards AND View All Data

#### Enhanced Folder Sharing

Manage Dashboards in Public Folders

### Install the CRM Sample Dashboards from AppExchange

Use these dashboards from the AppExchange as a starting point for building dashboards that meet your business needs.

The CRM sample dashboards package from AppExchange offers best-practice dashboards with underlying reports that are based on your organization's standard objects and fields. You can use these sales, marketing, service, and support dashboards to track business processes and key performance metrics for yourself, your team, and your company. Dashboards in this package include:

### Sales & Marketing Dashboards

- Marketing Executive Dashboard
- Sales Executive Dashboard
- Sales Manager Dashboard
- Salesperson Dashboard

#### Customer Service Dashboards

- Agent Supervisor Overview Dashboard
- Service Executive Overview Dashboard
- Service KPIs Dashboard
- 1. In AppExchange, search for "Salesforce CRM Dashboards" and click **Get It Now**.
- **2.** To install the sample dashboards, install the package.

## Dashboard Limits, Limitations, and Allocations

As you build dashboards of your data, be aware of these limits, limitations, and allocations.

## Salesforce Reports and Dashboards Allocations

| Feature   | Personal<br>Edition | Contact<br>Manager | Group<br>Edition | <b>Polesiand</b><br>Edition | Enterprise<br>Edition | Unlimited<br>and<br>Reference<br>Edition | Developer<br>Edition |
|---|---------------------|--------------------|------------------|-----------------------------|-----------------------|--|----------------------|
| Custom report types (Limits apply to all custom report types regardless of development status.) | N/A                 |                    |                  | 50                          | 200                   | 2,000                                    | 400                  |
| Dashboard filters   |                     |                    |                  | 3 per dasł                  | nboard                |  |                      |
| Dynamic<br>dashboards per org   | N/A                 |                    |                  |                             | Up to 5               | Up to 10                                 | Up to 3              |
| Field filters per<br>report <sup>1</sup>  | 20                  |                    |                  |                             |                       |  |                      |

## **EDITIONS**

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: both Legacy Folder Sharing and Enhanced Folder Sharing

### **USER PERMISSIONS**

To install packages:

 Download AppExchange Packages

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

| Feature  | Personal<br>Edition | Contact<br>Manager | Group<br>Edition | Professional<br>Edition | Enterprise<br>Edition | Unlimited<br>and<br>Performance<br>Edition | Developer<br>Edition |
|--|---------------------|--------------------|------------------|-------------------------|-----------------------|--|----------------------|
| Formulas per report  | 5                   |                    |                  |                         |                       |  |                      |
| Reporting snapshots  | N/A                 | N/A                |                  |                         | 1 <sup>2</sup>        | 2 <sup>2</sup>                             | 1 <sup>2, 3, 4</sup> |
| Scheduled dashboard refreshes  | N/A                 | N/A                |                  |                         | 1 <sup>2</sup>        | 2 <sup>2</sup>                             | N/A                  |
| Scheduled reports per hour<br>(Emailed reports can be up<br>to 10 MB.) | N/A                 |                    |                  | 1 <sup>2, 3, 5</sup>    | 1 <sup>2</sup>        | 2 <sup>2</sup>                             | 1 <sup>2, 3, 5</sup> |

<sup>&</sup>lt;sup>1</sup> These allocations apply to the report builder. If you're using the report wizard, the allocation is 10.

Salesforce retains historical data for the previous three months, plus the current month.

The following Salesforce Reports and Dashboards limits, limitations, and allocations apply to all supported editions.

#### **Report Limits, Limitations, and Allocations**

- The report builder preview shows a maximum of 20 rows for summary and matrix reports, and 50 rows for tabular.
- You can't have more than 250 groups or 4,000 values in a chart. If you see an error message saying that your chart has too many groups or values to plot, adjust the report filters to reduce the number. In combination charts, all groups and values count against the total.
- Reports display a maximum of 2,000 rows. To view all the rows, export the report to Excel or use the printable view for tabular and summary reports. For joined reports, export is not available, and the printable view displays a maximum of 20,000 rows.
  - Summary and matrix reports display the first 2,000 groupings when Show Details is disabled.
  - Matrix reports display a maximum of 400,000 summarized values.
  - Matrix reports display a maximum of 2,000 groupings in the vertical axis when Show Details is disabled. If there are more
    than 400,000 summarized values, rows are removed until the 2,000 groupings limit is met, then columns are removed until
    the number of summarized values moves below 400,000.
  - Matrix reports that return more than 2,000 rows don't show details. If you click **Show Details**, nothing happens. You can only view the report with details hidden.
- Up to five metrics display in the Lightning Experience report header. Metrics such as summarized fields appear in the order that they appear in the report, left to right. The grand total, when shown, always displays.
- When reports that have groupings are viewed in the Salesforce app, they're converted to tabular reports.
- By default, reports time out after 10 minutes.
- In a joined report, each block can have up to 100 columns. A joined report can have up to 5 blocks.

<sup>&</sup>lt;sup>2</sup> Up to 200 total.

<sup>&</sup>lt;sup>3</sup> Off-peak hours (between 6 PM and 3 AM local time) only.

<sup>&</sup>lt;sup>4</sup> Limited to one preferred start time per day.

<sup>&</sup>lt;sup>5</sup> Limited to three preferred start times per day.

• You can add up to 10 custom summary formulas to each block in a joined report. A joined report can have a total of 50 custom summary formulas.

- Each joined report can have up to 10 cross-block custom summary formulas.
- When you filter on standard long text area fields, such as Description or Solution Details, only the first 1000 characters of the field are searched for matches in reports.
- Only the first 254 characters in a rich text area or a long text area are displayed in a report.
- Summary fields on tabular, summary, and matrix reports can display up to 21-digits.
- Reports can't be filtered on custom long text area fields.
- Joined reports require that the new user interface theme is enabled. Users without the new theme are unable to create, edit, or run joined reports.
- Forecast reports include only opportunities that are set to close within the forecast period, except those assigned to the Omitted forecast category.
- Internet Explorer 6 is not supported for joined reports.

#### **Dashboard Limits, Limitations, and Allocations**

- A dashboard filter can have up to 50 options. By default, 10 options are enabled. Contact Salesforce to extend your limit.
- Each dashboard can have up to 20 components.
- It's not possible to filter on bucket fields. However, it is possible to use a report filtered on a bucket field on the dashboard page.
- A dashboard table or chart can display up to 20 photos.
- You must wait at least one minute between dashboard refreshes.

#### **Report Type Limits, Limitations, and Allocations**

- A custom report type can contain up to 60 object references. For example, if you select the maximum limit of four object relationships for a report type, then you could select fields via lookup from an additional 56 objects. However, users will receive an error message if they run a report from a custom report type and the report contains columns from more than 20 different objects.
- You can add up to 1000 fields to each custom report type.

#### Reporting Snapshot Limits, Limitations, and Allocations

- The maximum number of rows you can insert into a custom object is 2,000.
- The maximum number of runs you can store is 200.
- The maximum number of source report columns you can map to target fields is 100.

#### Filtering Limits, Limitations, and Allocations

Only the first 255 characters in a custom text field count for filtering purposes.

#### **Embedded Report Charts Limits, Limitations, and Allocations**

- You can have two report charts per page.
- You can only add report charts from the enhanced page layout editor. The mini console and the original page layout editor are not supported.
- On detail pages, users can refresh up to 100 report charts every 60 minutes.
- Your org can refresh up to 3,000 report charts every 60 minutes.

#### List View Limits, Limitations, and Allocations

• Only the first 255 characters are shown for custom long text area fields in list views.

#### **Bucket and Bucket Field Limits, Limitations, and Allocations**

- Each report can include up to five bucket fields.
- Each bucket field can contain up to 20 buckets.
- Each bucket can contain up to 20 values.
- Bucket fields are available for use only in the report where they're generated. To use a bucket in multiple reports, create the field for each report, or create a separate formula field for the object that's dependent on the bucket.
  - **1**

**Note**: These limits don't apply to the use of Other as permitted within the bucket field's setup.

- Buckets and bucket fields aren't available for reports that include external objects.
- If a bucket field's source column has a custom index, and you filter by the bucket field, then the performance gains from the custom index are lost.

#### **Historical Trend Report Limits, Limitations, and Allocations**

- Salesforce retains historical data for the previous three months, plus the current month.
- Up to 5 million rows of historical trending data can be stored for each object. Historical data capture stops when the limit is exceeded. The admin is alerted by email when any object reaches 70 percent of the limit, and again if the limit is exceeded.
- Each historical trend report can contain up to 100 fields. In Opportunities reports, this includes the standard preselected fields, which can't be disabled.
- Formula fields are not supported.
- Row limit filters are not supported.
- The summary report format is not supported.
- You can specify up to five historical snapshot dates in each historical trend report.
- You can use up to four historical filters on each historical trend report.
- These field types are supported: Number, Currency, Date, Picklist, Lookup.
- Dated exchange rates are not supported. When you run the historical trend report, it only uses the latest dated exchange rate.
- Internet Explorer 6 is not supported.
- You can't subscribe to historical trend reports.
- The Report Wizard is not supported. Historical trend reports can only be created with the Report Builder.
- Historical trend reporting with charts is supported in Lightning Experience, but tabular views of historical trend reports aren't
  available.

#### **External Object Report Limits, Limitations, and Allocations**

If your report includes an external object, the results probably don't reflect the full data set. External objects behave similarly to custom objects, except that they map to data that's stored outside your Salesforce org. A report that includes an external object fetches up to 2,000 records for the primary object and can encounter callout limits while fetching external object data. If the report results in few or no rows, try customizing the report to obtain more relevant external object rows.

#### **Cross Filters**

- Each report can have up to three cross filters.
- Each cross filter can have up to five subfilters.
- Filter logic applies only to field filters, not cross filters.

### Reports and Dashboards API Limits, Limitations, and Allocations

The following limits, limitations, and allocations apply to both the Reports and Dashboards REST API and Reports and Dashboards API via Apex.

- Cross filters, standard report filters, and filtering by row limit are unavailable when filtering data.
- Historical trend reports are only supported for matrix reports.
- The API can process only reports that contain up to 100 fields selected as columns.
- A list of up to 200 recently viewed reports can be returned.
- Your org can request up to 500 synchronous report runs per hour.
- The API supports up to 20 synchronous report run requests at a time.
- A list of up to 2,000 instances of a report that was run asynchronously can be returned.
- The API supports up to 200 requests at a time to get results of asynchronous report runs.
- Your organization can request up to 1,200 asynchronous requests per hour.
- Asynchronous report run results are available within a 24-hour rolling period.
- The API returns up to the first 2,000 report rows. You can narrow results using filters.
- You can add up to 20 custom field filters when you run a report.
- Your org can request up to 200 dashboard refreshes per hour.
- Your org can request results for up to 5,000 dashboards per hour.

## Why Doesn't My Dashboard Display the Data I Expect?

If you're not seeing data you expect, refresh for latest data, check that you have the right running user, and verify your dashboard data sources.

If your dashboard data doesn't look as you expect, check the following:

- **Running user.** Remember that you're viewing the dashboard from the perspective of the running user. What you see is based on that user's access rights. For dynamic dashboards, you can only see what you yourself can access.
- Refresh Dashboard. If you are viewing old data, click Refresh to refresh your dashboard.
- **Data sources.** Verify that your data sources (reports, s-controls, or Visualforce pages) contain the information you want displayed in the dashboard components.

For further information regarding dashboard running user and dashboard refresh, review the articles Choose a Dashboard Running User on page 1141 and Refresh Dashboard Data on page 1153.

## Why Can't I Use a Report in a Dashboard Component?

Most reports are available for use as data sources in dashboard components, but there are some reports which are unsupported. You can usually edit unsupported reports to make them compatible with dashboard components. Read on to learn about when and why reports aren't supported, and how to make 'em work.

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

# Report and Dashboard Folders

Use report and dashboard folders to organize your reports and dashboards. To share reports and dashboards, you share the folder, not the report or dashboard itself.

Watch a video: Manage Report and Dashboard Folders (Lightning Experience)

When you save a report or dashboard, it goes by default into your private reports or dashboards folder. To save to a public public/custom folder, select the folder in the Save dialog box.

By default, all orgs created after the Summer '13 Salesforce release use enhanced folder sharing. If your org is using Salesforce Classic and doesn't have Enhanced Analytics Folder Sharing enabled, see Turn On Enhanced Folder Sharing for Reports and Dashboards in the Salesforce Help.

Enhanced folder sharing offers these advantages in comparison to legacy folder sharing.

- Sharing at the user, group, or role level, or a combination of these
- Sharing with individual users
- Fine-grained access levels for each folder share
- Same permission structure used for both reports and dashboards

Enhanced folder sharing supports these access levels.

- Viewer—View folders and their content, run reports, and refresh dashboards.
- Editor—All viewer access, plus the ability to add content to a folder, edit all the content in a folder, and delete content from a folder.
- Manager—All viewer and editor access, plus the ability to rename and delete folders and edit, delete, or remove shares.

If you have orgs created before the Summer '13 release and don't want to reassign permissions for the legacy reports and dashboards, you can continue to use legacy folder sharing in Salesforce Classic. With legacy folder sharing, Salesforce determines a folder's accessibility and visibility to a user as read only or read write:

- Read only—When a folder is visible to a user, the user can see and run the reports stored in that folder.
- Read and write—Users with read-write permission on folder can save reports to the folder. When saving, the users see only the report folders for which they have write permission.

Notes about folder sharing:

## EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

- To open a report or dashboard, you need:
  - Access to the folder in which the report or dashboard is saved
  - The necessary user permission

For example, to run a report you need access to the folder in which it's saved and the "Run Reports" user permission.

- The concept of shared/not shared folders is different from the concept of public and private folders:
  - The reports or dashboards in a private folder are always invisible to everyone except the person who created the folder.
  - The reports or dashboards in any folder that is not private are visible to everyone who has permission to view the reports or dashboards.
- The following folder names are different in Salesforce Classic and Lightning Experience, but the folders are the same.

| Salesforce Classic         | Lightning Experience |
|----------------------------|----------------------|
| Unfiled Public Reports     | Public Reports       |
| Unfiled Public Dashboards  | Public Dashboards    |
| My Personal Custom Reports | Private Reports      |
| My Personal Dashboards     | Private Dashboards   |

## Access Levels for Report and Dashboard Folders

Each user, group, or role can have its own level of access to a report and dashboard folder. Viewers can see the data. Editors can determine what data is shown. Managers can control access.



Tip: If you're not ready to share a report or dashboard, keep it in a personal folder that only you can access. The My Personal Custom Reports folder and the My Personal Dashboards folder are already set up for you. Create more folders if you need them. When you create a folder, it is accessible only to you and to users with administrative permissions, until you share it.

#### SEE ALSO:

Share a Report or Dashboard Folder in Salesforce Classic Compare Access Levels for Report and Dashboard Folders

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

### Viewer Access to Report and Dashboard Folders

Viewer access allows you to view the reports or dashboards in a folder, but does not determine access to folder contents. Permissions set for the reports and dashboards themselves determine your access to the contents. For example, if you have Viewer access to a reports folder and Create and Customize Reports permission to a report in the folder, you can rename or delete the report.

All users have at least Viewer access to report and dashboard folders that have been shared with them. Some users have administrative user permissions that give them greater access.

View access is useful in a case such as the following. Samir is a sales rep who likes to start his day by checking his position on the sales leader board, which appears on the Master Sales dashboard. He has to refresh the dashboard to get the latest standings, so he needs to view the data in the underlying reports. But he doesn't want to edit the reports or the dashboard. All he needs is Viewer access to the folder that contains the Master Sales dashboard.

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## Editor Access to Report and Dashboard Folders

Editor access allows you to view and save the reports or dashboards in a folder, but does not determine access to folder contents. Permissions set for the reports and dashboards themselves determine your access to the folder contents. For example, if you have Editor access to a folder and Run Reports permission to a report in the folder, you can run the report but not make changes.

Editor access is useful in a case such as the following. Allison, a sales manager, wants to provide a different sales dashboard for each of the three regional teams. Editor access to the folder that contains the Master Sales dashboard allows her to move the underlying reports into the correct folders and then modify them to show the appropriate data.



**Note:** You can't give Editor access to standard report folders. By default, all users get Viewer access to these folders.

## EDITIONS

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

## Manager Access to Report and Dashboard Folders

Manager access allows you to view, share, save, rename, and delete the reports or dashboards in a folder, but does not determine access to folder contents. Permissions set for the reports and dashboards themselves determine your access to the folder contents. For example, if you have Manager access to a folder and Run Reports permission to a report in the folder, you can run the report, but not edit or delete it.

Manager access is useful in a case such as the following. Alan is a sales administrator who manages too many reports to pay attention to them all individually. He creates a report folder called Regional Reports. As the creator, he has Manage rights to the folder. He gives Sales Reps, a public group, Viewer access. And he makes Allison, the sales manager, another Manager on the folder.



**Note:** You can't give Manager access to standard report folders. By default, all users get Viewer access to these folders.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

### Compare Access Levels for Report and Dashboard Folders

Use this chart for a quick view of what Viewer, Editor, and Manager access enables users to do with enhanced folder sharing for report and dashboard folders.

|  | View | Edit | Manage |
|--|------|------|--------|
| View reports or dashboards in the folder       | ~    | ~    | ~      |
| See who has what level of access to the folder | ~    | ~    | ~      |
| Save a report or dashboard in the folder       |      | ~    | ~      |
| Rename a report or dashboard in the folder     |      | ~    | ~      |
| Delete a report or dashboard from the folder   |      | ~    | ~      |
| Share a folder                                 |      |      | ~      |
| Change the folder's name                       |      |      | ~      |
| Change the folder's sharing settings           |      |      | ~      |
| Delete a folder                                |      |      | ~      |

# EDITIONS

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing

Working with reports and dashboards requires user permissions in addition to folder permissions. For information about required user permissions, see User Permissions for Sharing Reports and Dashboards.

#### SEE ALSO:

Turn On Enhanced Folder Sharing for Reports and Dashboards

#### Access to Dashboard Folders

Permissions control folder access. Users must have certain permissions to access public, hidden, or shared dashboard folders.

#### **Public Folders**

The following permissions apply to folders with these visibility settings:

- This folder is accessible by all users, including portal users
- This folder is accessible by all users, except for portal users

| Access Level | Permissions Needed to Access<br>Read-Only Folders   | Permissions Needed to Access<br>Read/Write Folders     |
|--------------|---|--|
| Read         | Run Reports   | Run Reports  |
| Write New    | <ul><li>All of the following:</li><li>Run Reports</li><li>Manage Dashboards</li><li>View All Data</li></ul> | Both of the following:  Run Reports  Manage Dashboards |

### **EDITIONS**

Available in: both Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **All** Editions except **Database.com** 

Report folders not available in: **Contact Manager**, **Group**, and **Personal** Editions

| Access Level  | Permissions Needed to Access Read-Only Folders | Permissions Needed to Access Read/Write Folders |
|---------------|--|---|
| Modify/Delete | All of the following:                          | All of the following:                           |
|               | Run Reports                                    | Run Reports                                     |
|               | <ul> <li>Manage Dashboards</li> </ul>          | Manage Dashboards                               |
|               | View All Data                                  | View All Data                                   |

### **Hidden Folders**

The following permissions apply to folders that have this visibility setting:

• This folder is hidden from all users

| Access Level  | Permissions Needed to Access Read-Only Folders | Permissions Needed to Access Read/Write Folders |
|---------------|--|---|
| Read          | Both of the following:                         | Both of the following:                          |
|               | Run Reports                                    | Run Reports                                     |
|               | View All Data                                  | View All Data                                   |
| Write New     | All of the following:                          | All of the following:                           |
|               | Run Reports                                    | Run Reports                                     |
|               | <ul> <li>Manage Dashboards</li> </ul>          | Manage Dashboards                               |
|               | View All Data                                  | View All Data                                   |
| Modify/Delete | All of the following:                          | All of the following:                           |
|               | Run Reports                                    | Run Reports                                     |
|               | <ul> <li>Manage Dashboards</li> </ul>          | Manage Dashboards                               |
|               | View All Data                                  | View All Data                                   |

### **Shared Folders**

| Access Level  | Permissions Needed to Access Read-Only Folders | Permissions Needed to Access Read/Write Folders |
|---------------|--|---|
| Read          | Run Reports                                    | Run Reports                                     |
| Write New     | All of the following:                          | Both of the following:                          |
|               | Run Reports                                    | Run Reports                                     |
|               | <ul> <li>Manage Dashboards</li> </ul>          | <ul> <li>Manage Dashboards</li> </ul>           |
|               | View All Data                                  |   |
| Modify/Delete | All of the following:                          | All of the following:                           |
|               | Run Reports                                    | Run Reports                                     |
|               | <ul> <li>Manage Dashboards</li> </ul>          | Manage Dashboards                               |

| Access Level | Permissions Needed to Access Read-Only Folders |     | missions Needed to Access Read/Write<br>ders |
|--------------|--|-----|--|
|              | View All Data                                  | • ' | View All Data                                |

## User Permissions for Sharing Reports and Dashboards

Each level of access to a report or dashboard folder consists of a combination of user permissions. As an administrator, you can further fine-tune users' access to dashboards and reports by assigning or removing one or more permissions.

When analytics folder sharing is enabled, all users get Viewer access to report and dashboard folders, except users with higher administrative permissions. To give users broader privileges, assign Editor or Manager folder access and give report and dashboard user permissions as needed.

| User Permission                     | Description   |
|-------------------------------------|---|
| Create and Customize Dashboards     | Create, edit, and delete dashboards in the My Personal<br>Dashboards folder. Create dashboards and save to any<br>shared folder if sharing rights allow.  |
| Create and Customize Reports        | Create, edit, and delete reports in the My Personal<br>Custom Reports folder. Create reports and save to any<br>shared folder if sharing rights allow.  |
| Create Dashboard Folders            | Create dashboard folders and manage them if sharing rights allow.   |
| Create Report Folders               | Create report folders and manage them if sharing rights allow.  |
| Edit My Dashboards                  | Edit, move, save, and delete dashboards that you created in shared folders.   |
| Edit My Reports                     | Edit, move, save, and delete reports that you created in shared folders.  |
| Manage Dashboards in Public Folders | Create, edit, and delete dashboards, <sup>1</sup> and manage their sharing in all public dashboard folders. This permission does not extend to others' personal folders. This permission allows users to edit and share dashboards in all folders, including hidden folders. They also get these permissions: |
|                                     | Create and Customize Dashboards   |
|                                     | Create Dashboard Folders  |
|                                     | Edit My Dashboards  |
|                                     | View Dashboards in Public Folders   |
|                                     | ( <sup>1</sup> To edit a dynamic dashboard, users also need Manage<br>Dynamic Dashboards and View My Team's Dashboards<br>permissions.)   |

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs) and Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing

| Manage Reports in Public Folders  | Create, edit, and delete reports, and manage their sharing in all public report folders. This permission does not extend to others' personal folders. This permission allows users to edit and share reports in all folders, including hidden folders. They also get these permissions: |
|-----------------------------------|---|
|                                   | Create and Customize Reports  |
|                                   | Create Report Folders   |
|                                   | Edit My Reports   |
|                                   | View Reports in Public Folders  |
| View Dashboards in Public Folders | View dashboards in public dashboard folders. This permission does not extend to others' personal folders.   |
| View Reports in Public Folders    | View reports in public report folders. This permission does not extend to others' personal folders.   |

#### SEE ALSO:

Share a Report or Dashboard Folder in Salesforce Classic Compare Access Levels for Report and Dashboard Folders

## Create a Report or Dashboard Folder in Lightning Experience

You can create report and dashboard folders in Lightning Experience.

- 1. On the Reports or Dashboards tab, click **New Folder**.
- **2.** Name the folder. The folder name must be unique. You cannot have more than one report or dashboard folder with the same name as another report or dashboard folder.
- 3. Click Save.

The folder is now listed on the Reports or Dashboards menu under Created by Me. You can select the folder when saving a report or dashboard.

## **EDITIONS**

Available in: Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing

## **USER PERMISSIONS**

To create report folders:

• Create Report Folders

To create dashboard folders:

 Create Dashboard Folders

## Create a Report or Dashboard Subfolder in Lightning Experience

You can create report or dashboard folders within other report or dashboard folders in Lightning Experience.

- 1. On the Reports or Dashboards tab, open the folder you're working with.
- 2. Click New Folder.
- **3.** Name the subfolder. The name must be unique. You cannot have more than one report or dashboard folder with the same name as another report or dashboard folder.
- 4. Click Save.

The subfolder is created and added to the list of items in the folder you started from. You can select the subfolder when saving a report or dashboard.

## EDITIONS

Available in: Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing

### **USER PERMISSIONS**

To create report folders:

 Create Report Folders permission and manage access for the root folder in the tree

To create dashboard folders:

Create Dashboard
 Folders permission and manage access for the root folder in the tree

### Global Search for Folders

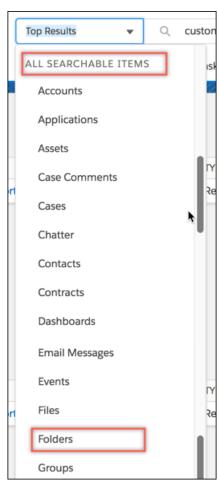
You can search for report or dashboard folders using global search. Global search for folders is not supported in the mobile version of Salesforce.

Select Folders from the ALL SEARCHABLE ITEMS list in the global search area.

#### **EDITIONS**

Available in: Lightning Experience

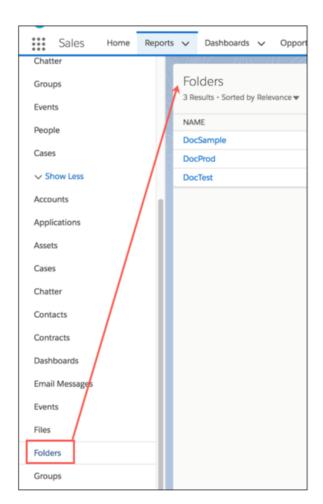
Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions



Start typing the folder name in the Global Search box to see a list of matching names to select from, or press Return to see the matching results.

If the folder you are looking for doesn't appear in the search results, click **Show More** on the left side of the page, and select **Folders** to display the matching folders.





If the Folders object is already selected on the left side, the search options include searching only within Folders.

See Search for Records in Lightning Experience for details on all the global search options.

#### Add a Folder as a Favorite

Add a report or dashboard folder as a favorite to quickly access the folders you're interested in. You can add a folder as a favorite in either of the following ways:

- Click next to the folder name on any page that lists report or dashboard folders, and choose
   Favorite.
- Open the folder to display its contents, and then click the star in the Lightning Experience header.

When you favorite a folder:

- It is added as a global favorite.
- It is also added to the All Favorites list in the Reports or Dashboards menu.

For some things to keep in mind when working with favorites, see Favorites Considerations.

Note: To display a favorite folder, click the arrow to the right of the star in the header of Lightning Experience and select the folder, or select the folder from the Favorites items on the Reports or Dashboards menu.



Available in: Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

## Share a Report or Dashboard Folder in Lightning Experience

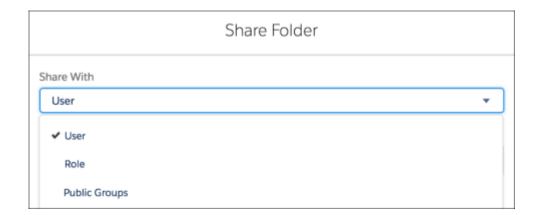
You can use enhanced folder sharing to share a report or dashboard folder with users, groups, or roles. Enhanced folder sharing is the default option for all orgs created after 2013.

You can share a report or dashboard folder with up to 25 users, groups, or roles from the Ul. You can share a folder with up to 500 users, groups, or roles using the folder sharing REST API.

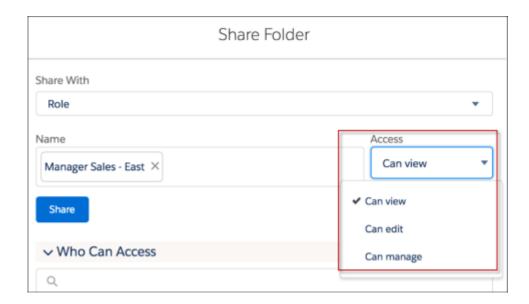
- 1. Click next to the folder name on any page that lists report or dashboard folders.
- 2. Click Share.
- **3.** Form the Share With dropdown, select who you want to share with.

# **EDITIONS** Available in: Lightning Experience Available in: Group, Professional, Enterprise, Performance, Unlimited, and **Developer** Editions Available in: Enhanced Folder Sharing **USER PERMISSIONS** To share report folders: Manage Reports in **Public Folders** To share dashboard folders: Manage Dashboards in

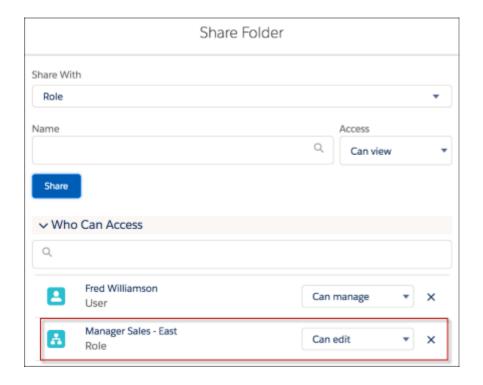
**Public Folders** 



- 4. For Name, enter the name you want to match. The name must match the category (user, group, or role). For example, if you select **User** as the category, specify the name of a user.
- 5. Select the folder access level for the user, role, or group.



**6.** Click **Share**. The sharing setting is applied to the Who Can Access list. Continue to add entries as needed. You can share with users, groups, roles, or a combination. If a user is identified in more than one entity, the greatest permission is granted. For example, a group is added with view only, but a user in the group is also added with edit or manage permissions. In this case, the edit or manage permissions apply to that user. To delete a Who Can Access entry, click **X** to the right of the entry. To modify access level for an entry, select a new access level.



**7.** When you are done, click **X** in the upper corner of the dialog box to close it and return to the page you were on. The folder is now listed on the Reports or Dashboards menu. You can select the folder when saving a report or dashboard.

# Rename a Report or Dashboard Folder in Lightning Experience

You can rename report and dashboard folders and subfolders in Lightning Experience.

- 1. On the Reports or Dashboards page, find the report or dashboard you want to rename.
- 2. Select the **Rename** row level action. (If you have customized columns on the page, you might have to scroll to the right to see the row-level action arrow .)
- **3.** Enter the new name.
- 4. Click Save.

The folder name is updated.

## EDITIONS

Available in: Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing

## **USER PERMISSIONS**

To create report folders:

Manage access for the specific folder

To create dashboard folders:

 Manage access for the specific folder

## Move Dashboards Between Folders in Lightning Experience

Move dashboards between folders to organize the dashboards and control access.

- 1. Do either of the following on the Dashboards page:
  - Click the dashboard you want to move. Click **Edit**. Click **and** then select **Save As**. In the dialog box, click **Select Folder**.
  - Find the report you want to move to and select the **Move** row level action. (If you have customized columns on the page, you might have to scroll to the right to see the row-level action arrow .)
- **2.** Select the target folder or subfolder.
  - Search for folders by name, or select a folder on the left and scroll to find the target folder on the right.
  - If you are looking for a subfolder, continue to navigate to the right as needed to find the subfolder.
  - You can use the breadcrumb links above the search box to navigate back to parent folders.
  - When you select a folder, the **Select** button changes to include the folder name.

## **EDITIONS**

Available in: Lightning Experience

Available in: **Group** (View Only), **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing

### **USER PERMISSIONS**

To create, edit, and delete public dashboard folders:

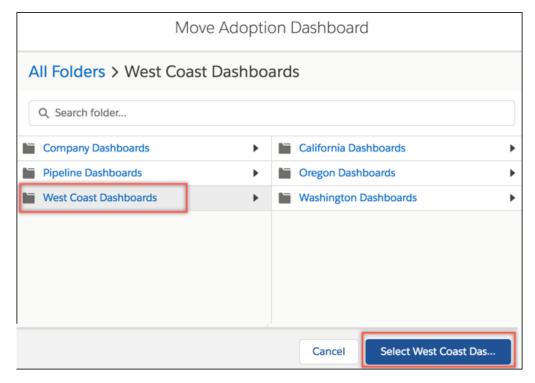
 Create Dashboard Folders

To move dashboards you created from one folder to another in Lightning Experience:

Edit My Dashboards

To move dashboards you didn't create from one folder to another in Lightning Experience:

 Manage Dashboards in Public Folders



**3.** After selecting the target folder, click the **Select** button.

The dashboard is saved to the specified folder.

## Move Reports Between Folders in Lightning Experience

Move reports between folders to organize the reports and control access.

- 1. Do either of the following on the Reports page:
  - Click the report you want to move. Select and then select **Save As**. In the dialog box, click **Select Folder**.
  - Find the report you want to move and select the **Move** row level action. (If you have customized columns on the page, you might have to scroll to the right to see the row-level action arrow .)
- 2. Select the target folder or subfolder.
  - Search for folders by name, or select a folder on the left and scroll to find the target folder on the right.
  - If you are looking for a subfolder, continue to navigate to the right as needed to find the subfolder.
  - You can use the breadcrumb links above the search box to navigate back to parent folders.
  - When you select a folder, the **Select** button changes to include the folder name.

### **EDITIONS**

Available in: Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing

### **USER PERMISSIONS**

To create, edit, and delete public report folders:

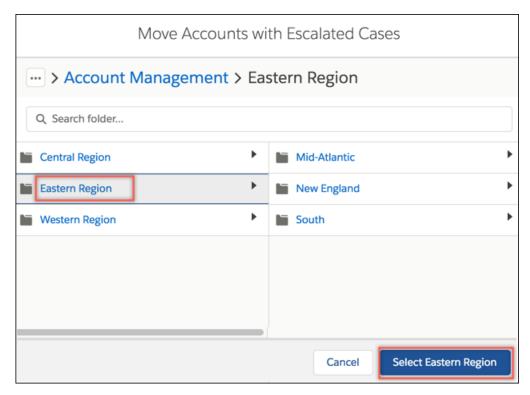
Create Report Folders

To move reports you created from one folder to another in Lightning Experience:

Edit My Reports

To move reports you didn't create from one folder to another in Lightning Experience:

 Manage Reports in Public Folders



**3.** After selecting the target folder, click the **Select** button.

The report is moved to the new folder.

## Share a Report or Dashboard Folder in Salesforce Classic

Enhanced folder sharing is the default option for all orgs created after the Summer '13 Salesforce release. If you have orgs created before Summer '13 and don't want to reassign permissions for the legacy reports and dashboards, you can use legacy folder sharing in Salesforce Classic.



**Note**: To give access to a folder, you must have either Manager access to that folder, the Manage Reports in Public Folders permission (for report folders), or the Manage Dashboards in Public Folders permission (for dashboard folders).

When you create a folder, you're its manager. Only you and others with administrative permissions can see it.

If a folder does not have Manager access, it's public, and users with the View Reports in Public Folders permission can view it. Depending on their object access, these users can also run the report.

You can share a report or dashboard folder with up to 25 users, groups, or roles at one time. You can share a folder with up to 100 users, groups, or roles using the folder sharing REST API.

## **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Legacy Folder Sharing

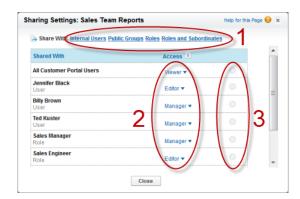
### **USER PERMISSIONS**

To share a report folder with public groups:

 Run Reports AND Manage Dashboards OR Manage Reports in Public Folders

To share a dashboard folder with public groups:

 Run Reports AND Manage Dashboards OR Manage Reports in Public Folders



Share your folder by user, by user group, or by role (1). Choose the access level you want each user, group, or role to have (2). Stop sharing the folder with the user, group, or role (3).

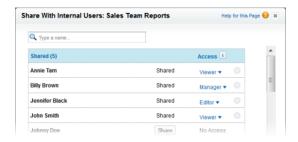
#### SEE ALSO:

Access Levels for Report and Dashboard Folders
User Permissions for Sharing Reports and Dashboards

## Share a Report or Dashboard Folder with an Individual User in Salesforce Classic

Enhanced folder sharing is the default option for all orgs created after the Summer '13 Salesforce release. If you have orgs created before Summer '13 and don't want to reassign permissions for the legacy reports and dashboards, you can use legacy folder sharing in Salesforce Classic.

- 1. On the Reports tab, hover over a report folder in the left pane, click 🗻, and then select **Share**.
- 2. Select Internal Users.
  - Note: Internal users doesn't include customer portal or partner portal users.
- **3.** Find the user you want, click **Share**, and choose an access level. To search, start typing a name.



**4.** Click **Done**, review your changes, and click **Close**.

### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Legacy Folder Sharing

## **USER PERMISSIONS**

To share a report folder with public groups:

 Run Reports AND Manage Dashboards OR Manage Reports in Public Folders

To share a dashboard folder with public groups:

 Run Reports AND Manage Dashboards OR Manage Reports in Public Folders

# Share a Report or Dashboard with a Group in Salesforce Classic

Enhanced folder sharing is the default option for all orgs created after the Summer '13 Salesforce release. If you have orgs created before Summer '13 and don't want to reassign permissions for the legacy reports and dashboards, you can use legacy folder sharing in Salesforce Classic.

- 1. On the Reports tab, hover over a report folder in the left pane, click 🔼, and then select **Share**.
- 2. Select Public Groups.
- **3.** Find the group you want, and click **Share**. To search, start typing a name.



- **4.** Choose the sharing level you want to give this group.
  - Note: Portal users can only have Viewer access to reports, and they can't use dashboards.
- **5.** Click **Done**, review your changes, and click **Close**.

#### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Legacy Folder Sharing

#### **USER PERMISSIONS**

To share a report folder with public groups:

 Run Reports AND Manage Dashboards OR Manage Reports in Public Folders

To share a dashboard folder with public groups:

 Run Reports AND Manage Dashboards OR Manage Reports in Public Folders

# Share a Report or Dashboard by Role in Salesforce Classic

Enhanced folder sharing is the default option for all orgs created after the Summer '13 Salesforce release. If you have orgs created before Summer '13 and don't want to reassign permissions for the legacy reports and dashboards, you can use legacy folder sharing in Salesforce Classic.

You can give report or dashboard folder access to users in a role, or to those users plus users in roles subordinate to that role.

For example, suppose the VP of Sales role and its subordinates have Viewer access to a dashboard folder, while the role itself (VP of Sales) has Manager access. In this case, a user in the VP of Sales role has greater control than someone with a role that's lower in the role hierarchy. If the VP of Sales leaves the company, whoever next assumes that role can manage dashboards in the folder.

- 1. On the Reports tab, hover over a report folder in the left pane, click 🗻, and then select **Share**.
- 2. Select Roles or Roles and Subordinates.
  - To give access to all users who have the role, select **Roles**.
  - To give access to those users plus everyone with a role below them in the role hierarchy, select Roles and Subordinates.
- **3.** Find the role you want, click **Share**, and choose a level of access. To search, start typing a name.



**4.** Click **Done**, review your changes, and click **Close**.

#### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Legacy Folder Sharing

## **USER PERMISSIONS**

To share a report folder with public groups:

 Run Reports AND Manage Dashboards OR Manage Reports in Public Folders

To share a dashboard folder with public groups:

 Run Reports AND Manage Dashboards OR Manage Reports in Public Folders

# Move a Report or Dashboard Between Folders in Salesforce Classic

It's a good practice to keep reports and dashboards organized in folders that reflect their function and audience. You can drag and drop reports and dashboards from one folder to another.

**Note**: You need edit access to folders before moving items between them. Moving items using drag-and-drop isn't supported in accessibility mode.

Move a report or dashboard between folders by dragging them from the list view to a report or dashboard folder on the Folders pane.

1. On the Reports tab list view, click and hold an item.

#### **EDITIONS**

Available in: Salesforce Classic (not available in all orgs)Salesforce Classic

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing and Legacy Folder Sharing

#### USER PERMISSIONS

To move reports:

Legacy Folder Sharing
Run Reports AND
Manage
Dashboards

Enhanced Folder Sharing

Edit My Reports



**2.** Drag the item to its destination folder in the Folders pane.



As you drag an item across a folder, a green check mark (1) indicates that the item can be moved into the selected folder. Conversely, a red icon ( ) means that the item can't be moved into the selected folder.

Keep the following in mind when moving items.

- Drag one item at a time.
- You can't move items from installed AppExchange packages or standard report folders into other folders.
- Move reports into report folders and dashboards into dashboard folders.

# **Deleting Folders**

Some rules apply to deletion of report and dashboard folders.

- You can delete an empty leaf folder or empty folder tree in Lightning Experience. An empty leaf folder is a folder that doesn't contain any reports or dashboards and doesn't have any subfolders. An empty folder tree is one with no reports or dashboards in the root folder or in any of the subfolders.
- If you want to delete a non-empty folder, either move the reports or dashboards in the folder to another folder, or delete the reports or dashboards, switch to Salesforce Classic, and remove the deleted reports and dashboards from the recycle bin. (Lightning Experience doesn't currently have a recycle bin.)
- 1. Click **Edit** next to the folder name from any page that lists folders. On the Reports tab, click then **Edit** in the Folders pane.
- 2. Click **Delete** or then **Delete**.
- 3. Click **OK** to confirm.

The folder is deleted.

## **EDITIONS**

Available in: Lightning Experience

Available in: **Group**, **Professional**, **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

Available in: Enhanced Folder Sharing

#### **USER PERMISSIONS**

To delete report folders:

 Manage access for the specific folder

To delete dashboard folders:

 Manage access for the specific folder

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