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# Managing Duplicate Records in Salesforce

Salesforce, Winter '16





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# DUPLICATE MANAGEMENT

Maintaining clean and accurate data is one of the most important things you can do to help your organization get the most out of Salesforce. Use Data.com Duplicate Management to control whether and when users can create duplicate records in Salesforce; customize the logic that's used to identify duplicates; and create reports on the duplicates that users save.

 **Note:** Duplicate Management uses Data.com technology, but does *not* require a Data.com license.

After Duplicate Management is set up, here's how it works.

- *When a user attempts to save a new record*, the record is first compared with existing Salesforce records to identify possible duplicates (1). The criteria used to compare records and identify the possible duplicates are defined by a *matching rule*. Next, a list of possible duplicates is returned (2). What happens when the record being saved is identified as a possible duplicate depends on what's defined in the *duplicate rule* (3). For example, the duplicate rule could block users from saving the possible duplicate record or allow them to save it anyway. Both the Block and Allow options include an alert, which tells users why they can't save the record and what they need to do. The Allow option includes the ability to report on the duplicate records.
- *When a user attempts to save an edited record*, the record is first checked to see if the user has changed the value of a matching rule field. If so, the duplicate management process works as described for new records. If not, no further action is taken and duplicates are not detected.

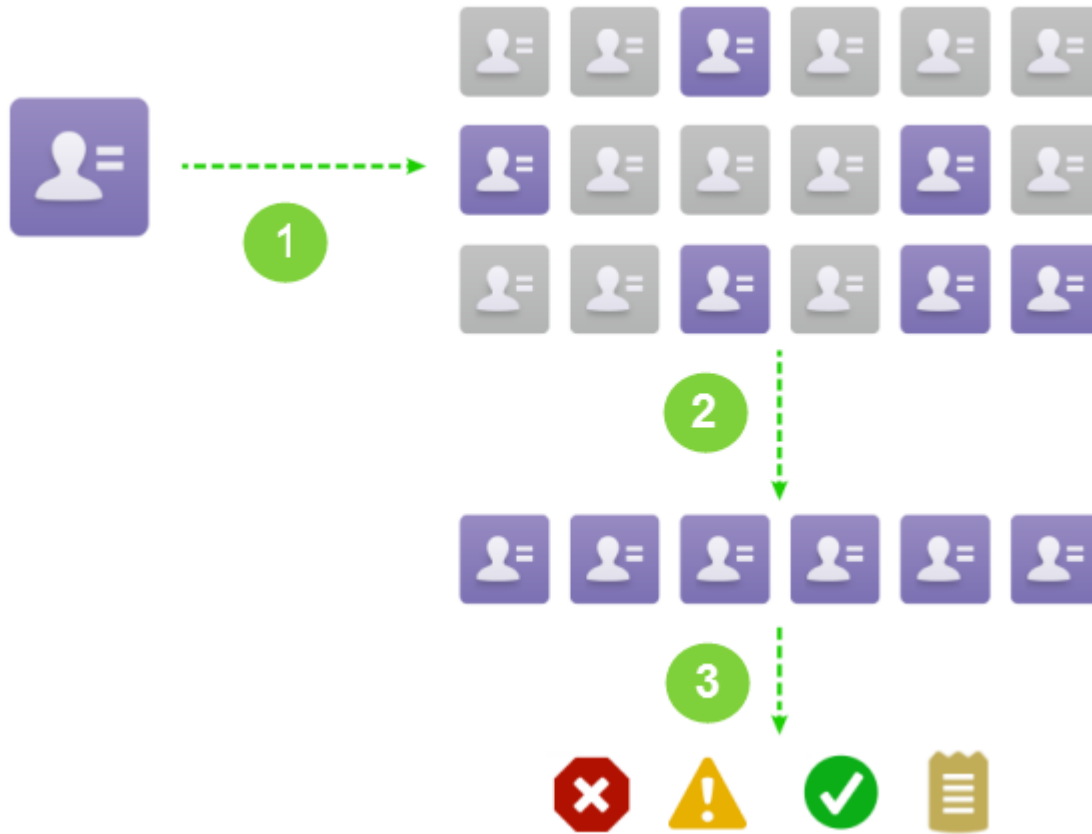
## EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in:

- Professional
- Enterprise
- Performance
- Unlimited
- Developer

## Duplicate Management



For a list of limits, see “Duplicate Management Limits” in the Salesforce Help.

# DUPLICATE MANAGEMENT CONCEPTS

To configure Data.com Duplicate Management more effectively, it's important to understand some key concepts.

## IN THIS SECTION:

### [Duplicate Rules](#)

Duplicate rules are used to control whether and when users can save duplicate records within Salesforce.

### [Matching Rules](#)

Matching rules are used to identify duplicate records within Salesforce.

### [Duplicate Record Sets](#)

Quickly see a list of duplicate records, grouped into duplicate sets, by clicking the Duplicate Record Sets tab. To do so, your organization needs to use the report action with its duplicate rules.

### [Duplicate Error Logs](#)

If your organization uses Data.com Duplicate Management, you can view any system errors that prevent the duplicate rules or matching rules from running successfully.

### [How Duplicate Management Affects Your Users](#)

When you've created and activated duplicate rules and your users try to save a record that's identified as a possible duplicate, users will be given guidance on how to proceed. This is what they'll see.

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## Duplicate Rules

Duplicate rules are used to control whether and when users can save duplicate records within Salesforce.

Duplicate rules tell Salesforce what action to take when a user attempts to create a duplicate record. Each duplicate rule needs to include at least one matching rule to identify which existing records are possible duplicates.

You can configure your duplicate rule to perform an action when a new record is created and when an existing record is edited. However, the rule will only run for edited records if the fields being edited are included in the associated matching rule.

 **Example:** The duplicate rule can block users from saving records that have been identified as possible duplicates or allow them to save them anyway. Both the Block and Allow options include an alert, which tells users why they can't save the record and what they need to do. The Allow option includes the ability to report on the duplicate records.

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## Matching Rules


Matching rules are used to identify duplicate records within Salesforce.

Watch a video:  [Understanding Matching Rules](#)

A matching rule is made up of individual fields that are assembled into an equation. Each field contains matching criteria that tell the rule how to compare the fields and what conditions need to be met for the specific field to be considered a match.

After a matching rule is activated, one or more match keys are automatically created and applied to existing records. (Also known as indexing, this process improves performance and returns a better set of match candidates because the matching rule is only looking for duplicates among records with the same match key.)

When the matching rule is run, it compares each field against the corresponding field in existing records that share the same match keys, and uses the matching criteria to determine how closely the fields, and ultimately the records, match.

 **Example:** A simple matching rule might specify that if two records' `Email` and `Phone` values match exactly, they are possible duplicates. Or you can use a variety of "fuzzy" matching methods to compare the fields.

Use matching rules with duplicate rules to manage whether and when users are allowed to create duplicate records within Salesforce.

You can use the standard matching rules or create your own custom matching rule. We recommend you use the standard matching rules because they've been carefully designed to return the best possible set of match candidates.

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## Duplicate Record Sets

Quickly see a list of duplicate records, grouped into duplicate sets, by clicking the Duplicate Record Sets tab. To do so, your organization needs to use the report action with its duplicate rules.

When a user saves a record that's identified as a duplicate by a duplicate rule with the report action:

- The saved record and all its duplicates, up to 100, will be assigned to a new or existing duplicate record set.
- The saved record and each of its duplicates will be listed as a duplicate record item within the duplicate record set.
- If the duplicate rule is configured to find duplicates across objects, all cross-object duplicates will be listed as duplicate record items within the duplicate record set.

Duplicate record sets and duplicate record items can be used to do the following.

- [Create custom report types](#)
- Create custom fields
- Write validation rules, triggers, and workflow rules
- Modify the fields that can appear on the respective page layouts

When using duplicate record sets, keep a few things in mind.

- By default, duplicate record sets are visible to only administrators, but the administrator can grant visibility to other users.
- If a lead is identified as a duplicate but converted before the duplicate record set is created, the converted lead won't be included in a duplicate set.

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## Duplicate Error Logs

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If your organization uses Data.com Duplicate Management, you can view any system errors that prevent the duplicate rules or matching rules from running successfully.

From Setup, enter *Duplicate Error Logs* in the **Quick Find** box, then select **Duplicate Error Logs**. There, you can see which, if any, errors occurred. Error logs are deleted after 90 days.

 **Example:** Here are some scenarios that could produce an error on the log.

- The match engine used for fuzzy matching is temporarily unavailable. Therefore, any matching rules that include fuzzy matching methods will not run.
- The Report action on duplicate rules fails because the system is unable to create a duplicate record set.

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## How Duplicate Management Affects Your Users

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When you've created and activated duplicate rules and your users try to save a record that's identified as a possible duplicate, users will be given guidance on how to proceed. This is what they'll see.

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Lead Owner

Lead Edit
Help for this Page

**Lead Edit**
Save (Ignore Alert) Save & New (Ignore Alert) Cancel

8 Possible Duplicate Records Found

You're creating a duplicate record. We recommend you use an existing record instead.

Name	Street	Phone	Zip/Postal Code	Email	Company	City	Title	Lead Owner	Last Modified Date
<a href="#">marc benioff</a>	1 market street	(800) 555-5555		mbenioff@salesforce.com	salesforce.com, Inc	San Francisco		<a href="#">Madison Rigsby</a>	10/3/2014 2:47 PM
<a href="#">m benioff</a>	1 market street	(800) 555-1234		mbenioff@salesforce.com	salesforce.com, Inc	San Francisco		<a href="#">Madison Rigsby</a>	10/3/2014 2:48 PM
<a href="#">marc benioff</a>	1 market street	(800) 555-5555		marc.benioff@salesforce.com	salesforce.com, Inc	San Francisco		<a href="#">Madison Rigsby</a>	10/3/2014 2:51 PM
<a href="#">marc benioff</a>	1 market street	(800) 555-5555		marc.benioff@salesforce.com	salesforce.com, Inc	San Francisco		<a href="#">Madison Rigsby</a>	10/10/2014 3:37 PM
<a href="#">marc benioff</a>	100 market street	(800) 555-5555		m.benioff@salesforce.com	salesforce.com, Inc	San Francisco		<a href="#">Madison Rigsby</a>	10/17/2014 1:12 PM

[Show All >>](#)

Name	Phone	Mailing City	Account Name	Email	Mailing Street	Mailing Zip/Postal Code	Title	Contact Owner	Last Modified Date
<a href="#">marc Benioff</a>	(800) 555-5555	San Francisco	<a href="#">Salesforce.com, Inc</a>	mbenioff@salesforce.com	1 Market Street			<a href="#">Madison Rigsby</a>	10/17/2014 10:27 AM
<a href="#">Mike Benioff</a>		San Francisco	<a href="#">Salesforce.com, Inc</a>	mbenioff@salesforce.com	1 Market Street			<a href="#">Madison Rigsby</a>	10/17/2014 10:28 AM

**Lead Information** ! - Required Information

Lead Owner: <a href="#">Madison Rigsby</a>	Lead Status: <span style="border: 1px solid #ccc; padding: 2px;">Open</span>
First Name: <span style="border: 1px solid #ccc; padding: 2px;">--None--</span> <span style="border: 1px solid #ccc; padding: 2px;">marc</span>	Phone: <span style="border: 1px solid #ccc; padding: 2px;">(800) 555-5555</span>
Last Name: <span style="border: 1px solid #ccc; padding: 2px;">benioff</span>	Email: <span style="border: 1px solid #ccc; padding: 2px;">mbenioff@salesforce.com</span>
Company: <span style="border: 1px solid #ccc; padding: 2px;">salesforce.com</span>	Rating: <span style="border: 1px solid #ccc; padding: 2px;">--None--</span>
Title: <span style="border: 1px solid #ccc; padding: 2px;"></span>	

- All duplicate rules include a system-generated message (1) that tells the user how many possible duplicates were found. The number of possible duplicates includes only the records the user has access to, even if the duplicate rule's record-level security was set to *Bypass sharing rules*. (The *Bypass sharing rule* option tells the associated matching rule to compare all records, regardless of the user's access.) If the user doesn't have access to any of the records that are identified as possible duplicates, then this message just says there are duplicates detected and the number of duplicates isn't included. The possible duplicates displayed in the list only includes records the user has access to.
- If your duplicate rule includes an alert, it will appear beneath the system-generated message (2).
- If your duplicate rule allows users to save a record even though it might be a possible duplicate, the **Save (Ignore Alert)** button is present (3). If your duplicate rule blocks users from saving a record that is a possible duplicate, the **Save** button is present but the record cannot be saved successfully until the user makes the necessary changes to the record so it's no longer flagged as a possible duplicate.
- The list of possible duplicates (4) includes only records the user has access to. The fields shown in the list include only fields the user has access to (up to the first 7 fields that were compared by the associated matching rule). A maximum of 5 records are displayed in this list, but if more than 5 duplicates are found, users can click **Show All >>** to see full list of records, up to 100. Records are listed in the order they were last modified. Users can go directly to one of the records in the list by clicking on its link.
- The highlighted fields (5) are the fields that were compared by the associated matching rule and determined to match.

# SET UP DUPLICATE MANAGEMENT IN SALESFORCE

To use Data.com Duplicate Management in your organization, you need two separate rules: a duplicate rule and a matching rule. The duplicate rule tells Salesforce what action to take when duplicates are identified. The matching rule defines how records are compared to one another to identify possible duplicates.

## IN THIS SECTION:

### [Create or Edit Duplicate Rules](#)

Use duplicate rules to define what happens when a user tries to save a duplicate record.

### [Create or Edit Custom Matching Rules](#)

Use matching rules to determine how two records are compared and identified as duplicates.

### [Create Custom Report Types for Duplicate Record Reports](#)

If your organization uses the Report action with its duplicate rules, you can run reports to analyze the quality of your data and to see how well your duplicate rules are working. That way, you can fine tune your duplicate rules if needed. First, you'll need to set up the appropriate custom report types.

## EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in:

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## Create or Edit Duplicate Rules

Use duplicate rules to define what happens when a user tries to save a duplicate record.

Watch a demo: [Managing Duplicate Records in Salesforce with Duplicate Rules](#)

In order for users to see the list of possible duplicates detected by the duplicate rule, they must have read access to the object defined in the rule.

1. From Setup, enter *Duplicate Rules* in the **Quick Find** box, then select **Duplicate Rules**.
2. To edit an existing rule, click the rule name, then click **Edit**. To create a new rule, click **New Rule**, then select the object you want the rule to apply to.
3. Enter the rule details, including the rule's name, description, and record-level security settings.
4. Select which action will occur when a user tries to save a duplicate record.  
If the action includes an alert to users, we'll provide default alert text that you can customize. Only the Allow action includes the report option.
5. In the Matching Rules section, first select the object that records will be compared with. Then select which matching rule will determine how records are identified as duplicates.  
The list includes all available matching rules for the selected object. If none of the matching rules in the list are what you want, select **Create New Matching Rule**.

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## USER PERMISSIONS

To create, edit, or delete duplicate rules:


- "Customize Application"

To activate and deactivate duplicate rules:

- "Customize Application"

To view duplicate rules:

- "View Setup and Configuration"

 **Tip:** We recommend you use the standard matching rules because they've been carefully designed to return the best possible set of match candidates. Just be sure you've activated them.

If, however, you decide to create a new matching rule, we recommend you first finish creating your duplicate rule. Then create and activate the new matching rule. When you come back to the duplicate rule, it will automatically have the newly created matching rule associated it, as long as it didn't already have an associated matching rule.

6. Make sure you've selected the field mapping for each matching rule, if needed.

If the matching rule is comparing records from two different objects or uses custom fields:

- You'll need to decide how you want the fields from the first object to be compared to the fields from the second object. For example, you might map a custom field called `work_email` to the standard `Email` field.
- Some data may be truncated prior to matching two text fields with different maximum lengths.

7. If you want your duplicate rule to run only if specific conditions are met, specify the conditions.


For example, you could add a condition that tells the rule to run only if the record was entered by a user with a certain profile or role, or if the record includes a specific country or state.

8. Save the rule.

9. Activate the rule.

For the activation to succeed, all associated matching rules must be active.

10. If you have more than one active duplicate rule for a particular object, you may want to adjust the order in which the rules are processed. You can reorder rules by clicking **Reorder** from any rule's detail page.

 **Tip:** If the first duplicate rule finds a match for a particular record, that record will not be evaluated by subsequent duplicate rules. Therefore, you should order your duplicate rule so that rules with the Block action are run before rules with the Allow action.

## Create or Edit Custom Matching Rules

Use matching rules to determine how two records are compared and identified as duplicates.

▶ [Watch a Demo](#) (3:39)

1. From Setup, enter *Matching Rules* in the **Quick Find** box, then select **Matching Rules**.

2. If editing an existing matching rule, make sure the rule is inactive.

3. Click **New Rule** or **Edit** next to the existing rule you want to edit.

4. Select which object this matching rule will apply to.

5. Enter a name and description for the rule.

6. Enter the [matching criteria](#).

The matching criteria is where you define which fields to compare and how. To add additional fields (up to 10 total) click **Add Filter Logic...** and then **Add Row**.

7. If you need to adjust the matching equation, click **Add Filter Logic...** Here you can, for example, manually change an AND expression to an OR expression.

8. Save the rule.

9. Activate the rule.

The activation process may take some time, so we'll send you an email when the process is complete and your matching rule is ready to use.

After the matching rule is active, it's available to use with other Data.com Duplicate Management tools. For example, using a matching rule with a [duplicate rule](#) tells Salesforce to take certain actions when users try to save a record the matching rule has identified as a duplicate.

### EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in:

- Professional
- Enterprise
- Performance
- Unlimited
- Developer

### USER PERMISSIONS

To create, edit, or delete matching rules:

- "Customize Application"

To activate and deactivate matching rules:

- "Customize Application"

To view matching rules:

- "View Setup and Configuration"

## Create Custom Report Types for Duplicate Record Reports

If your organization uses the Report action with its duplicate rules, you can run reports to analyze the quality of your data and to see how well your duplicate rules are working. That way, you can fine tune your duplicate rules if needed. First, you'll need to set up the appropriate custom report types.

The only records that will appear in these reports are:

- Records identified as duplicates by duplicate rules that include the report action.
  - Records that were manually added to the Duplicate Record Set object.
1. Make sure you're familiar with custom report types and the general steps for creating and maintaining them.
  2. Create custom report types with the appropriate object relationships and configure them as necessary.

Here are some examples of custom report types to get you started.

Report Type	Possible Use	A (Primary Object)	B	Additional Steps
Account Duplicates	Create reports on the duplicate accounts that were found by your duplicate rules.	Accounts	Duplicate Record Items	
Contact Duplicates	Create reports on the duplicate contacts that were found by your duplicate rules.	Contacts	Duplicate Record Items	
Lead Duplicates	Create reports on the duplicate leads that were found by your duplicate rules.	Leads	Duplicate Record Items	
All Duplicates	Create reports to see how well your duplicate rules are performing.	Duplicate Record Set	Duplicate Record Items	Add the Duplicate Rule Name lookup field to the Duplicate Record Set page layout.

3. Deploy the report types you want to make available to users.

### EDITIONS

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### USER PERMISSIONS

To create or update custom report types:

- "Manage Custom Report Types"

To delete custom report types:

- "Modify All Data"

4. Let users know that they can create reports using these custom report types.

# MATCHING RULE REFERENCE

Here's some additional information that will help you understand how matching rules work and how to use them.

## IN THIS SECTION:

### [Standard Matching Rules](#)

We've provided several standard matching rules that you can use with Data.com Duplicate Management tools, such as duplicate rules. Each standard matching rule has been carefully designed to return the best possible set of match candidates for accounts, contacts, or leads.

### [Matching Criteria for Matching Rules](#)

Matching rules use criteria to determine how closely a field on a new or edited record matches the same field on an existing record, and, ultimately, whether the two records match. When you create a custom matching rule, you need to define certain criteria. Standard matching rules include additional criteria, all of which are defined for you.

### [Matching Methods Used with Matching Rules](#)

The matching method is the part of the matching rule's matching criteria that determines how a specific field in one record is compared to the same field in another record. We've provided an exact matching method and a variety of fuzzy matching methods.

### [Matching Algorithms Used with Matching Methods](#)

The matching method and matching algorithm are part of the matching rule's matching criteria. Together, they determine how a specific field in one record is compared to the same field in another record and whether the fields are considered matches.

### [Match Keys and Matching Rules](#)

Match keys are used to increase the effectiveness of matching rules. By understanding how match keys are created, you'll get a better sense of how matching rules work.

### [Match Keys Used by Standard Matching Rules](#)

Match keys are used to increase the effectiveness of matching rules. Review the match key information for a better understanding of how standard matching rules work.

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## Standard Matching Rules

We've provided several standard matching rules that you can use with Data.com Duplicate Management tools, such as duplicate rules. Each standard matching rule has been carefully designed to return the best possible set of match candidates for accounts, contacts, or leads.

## IN THIS SECTION:

### [Standard Contact and Lead Matching Rule](#)

Like all matching rules, the standard matching rule used for contact and lead records is made up of fields that are arranged into an equation. Each field also contains matching criteria that the rule uses to determine how closely the field matches the same field in an existing record, and ultimately whether the record is a match.

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[Standard Account Matching Rule](#)

Like all matching rules, the standard matching rule used for account records is made up of fields that are arranged into an equation. Each field contains matching criteria that the rule uses to determine how closely the field matches the same field in an existing record, and ultimately whether the record is a match.

## Standard Contact and Lead Matching Rule

Like all matching rules, the standard matching rule used for contact and lead records is made up of fields that are arranged into an equation. Each field also contains matching criteria that the rule uses to determine how closely the field matches the same field in an existing record, and ultimately whether the record is a match.

### Matching Equation

Rule Name	Matching Equation
Standard Contact Matching Rule	<i>(First Name AND Last Name AND Title AND Company Name)</i>
Standard Lead Matching Rule	<i>OR (First Name AND Last Name AND Email)</i> <i>OR (First Name AND Last Name AND Phone AND Company Name)</i> <i>OR (First Name AND Last Name AND Mailing Street AND (City OR ZIP OR Phone))</i> <i>OR (First Name AND Last Name AND Mailing Street AND Title)</i> <i>OR (First Name AND Last Name AND Title AND Email)</i> <i>OR (First Name AND Last Name AND Phone )</i>

### Matching Criteria

For a definition of each matching criteria, see [Matching Criteria for Matching Rules](#) on page 17.

Fields on Contacts	Fields on Leads	Matching Algorithms	Scoring Method	Threshold	Blank Fields	Special Handling
First Name	First Name	Exact Initials Jaro-Winkler Distance Metaphone 3 Name Variant	Maximum	85	Don't match (Ignores blank fields when Email is included in field grouping)	If record contains a value for the both <code>First Name</code> and <code>Last Name</code> fields, those values will be transposed to account for possible data entry mistakes.  For example, if the first name is <i>George</i> and the last name is <i>Michael</i> , the matching rule will also evaluate first name as <i>Michael</i> and the last name as <i>George</i> .

Fields on Contacts	Fields on Leads	Matching Algorithms	Scoring Method	Threshold	Blank Fields	Special Handling
Last Name	Last Name	Exact Keyboard Distance Metaphone 3	Maximum	90	Don't match (Ignores blank fields when Email is included in field grouping)	<p>If record contains a value for the both <code>First Name</code> and <code>Last Name</code> fields, those values will be transposed to account for possible data entry mistakes.</p> <p>For example, if the first name is <i>George</i> and the last name is <i>Michael</i>, the matching rule will also evaluate first name as <i>Michael</i> and the last name as <i>George</i>.</p>
Title	Title	Acronym Exact Kullback-Liebler Distance	Maximum	50	Don't match	
Account Name	Company	Acronym Edit Distance Exact	Maximum	70	Don't match	
Email	Email	Exact	Maximum	100	Don't match	
Phone	Phone	Exact	Weighted Average	80	Don't match on all sections except Area Code, which ignores blank fields	<p>Phone numbers are broken into sections and compared by those sections. Each section has its own matching method and match score. The section scores are weighted to come up with one score for the field. This process works best with North American data.</p> <ul style="list-style-type: none"> <li>• International code (Exact, 10% of field's match score)</li> <li>• Area code (Exact, 50% of field's match score)</li> <li>• Next 3 digits (Exact, 30% of field's match score)</li> <li>• Last 4 digits (Exact, 10% of field's match score)</li> </ul> <p>For example, suppose these two phone numbers are being compared: <i>1-415-555-1234</i> and <i>1-415-555-5678</i>.</p> <p>All sections match exactly <i>except</i> the last 4 digits, so the field has a match score of 90, which is considered a match because it exceeds the threshold of 80.</p>
Mailing Street	Street	Exact	Weighted Average	80	Don't match	<p>Addresses are broken into sections and compared by those sections. Each section has its own matching method and match score. The section scores are weighted to come up with one score</p>

Fields on Contacts	Fields on Leads	Matching Algorithms	Scoring Method	Threshold	Blank Fields	Special Handling
						<p>for the field. This process works best with North American data.</p> <ul style="list-style-type: none"> <li>Street Name (Edit Distance, 50% of field's match score)</li> <li>Street Number (Exact, 20% of field's match score)</li> <li>Street Suffix (Exact, 15% of field's match score)</li> <li>Suite Number (Exact, 15% of field's match score)</li> </ul> <p>For example, suppose these two addresses are being compared: <i>123 Market Street, Suite 100</i> and <i>123 Market Drive, Suite 300</i>.</p> <p>Because only the street number and street name match, the field has a match score of 70, which is not considered a match because it's less than the threshold of 80.</p>
Mailing ZIP/Postal Code	ZIP/Postal Code	Exact	Weighted Average	80		<p>ZIP codes are broken into sections and compared by those sections. Each section has its own matching method and match score. The section scores are weighted to come up with one score for the field.</p> <ul style="list-style-type: none"> <li>First 5 digits (Exact, 90% of field's match score)</li> <li>Next 4 digits(Exact, 10% of field's match score)</li> </ul>
Mailing City	City	Edit Distance Exact	Maximum	85	Don't match	

## Standard Account Matching Rule

Like all matching rules, the standard matching rule used for account records is made up of fields that are arranged into an equation. Each field contains matching criteria that the rule uses to determine how closely the field matches the same field in an existing record, and ultimately whether the record is a match.

### Matching Equation

**Important:** In order for the Standard Account Matching Rule to return matches accurately, the new or edited record must include a value in the `Account Name` and either the `City` or `ZIP` fields.

Rule Name	Matching Equation
Standard Account Matching Rule	<p>(<i>Account Name</i> AND <i>Billing Street</i>)</p> <p>OR (<i>Account Name</i> AND <i>City</i>)</p> <p>OR (<i>Account Name</i> AND <i>ZIP</i>)</p> <p>OR (<i>Account Name</i> AND <i>Phone</i>)</p> <p>OR (<i>Website</i> AND <i>Phone</i>)</p> <p>OR (<i>Website</i> AND <i>Billing Street</i>)</p>

## Matching Criteria


For a definition of each matching criterion, see [Matching Criteria for Matching Rules](#) on page 17.

Field	Matching Algorithms	Scoring Method	Threshold	Blank Fields	Special Handling
Account Name	Acronym Edit Distance Exact	Maximum	70	Don't match	Removes words such as Inc and Corp before comparing fields. Also, company names are normalized. For example, 1st National Bank is normalized to First National Bank.
Phone	Exact	Weighted Average	80	Don't match on all sections expect Area Code, which ignores blank fields	<p>Phone numbers are broken into sections and compared by those sections. Each section has its own matching method and match score. The section scores are weighted to come up with one score for the field. This process works best with North American data.</p> <ul style="list-style-type: none"> <li>• International code (Exact, 10% of field's match score)</li> <li>• Area code (Exact, 50% of field's match score)</li> <li>• Next 3 digits (Exact, 30% of field's match score)</li> <li>• Last 4 digits (Exact, 10% of field's match score)</li> </ul> <p>For example, suppose these two phone numbers are being compared: 1-415-555-1234 and 1-415-555-5678.</p> <p>All sections match exactly <i>except</i> the last 4 digits, so the field has a match score of 90, which is considered a match because it exceeds the threshold of 80.</p>
Billing Street	Edit Distance Exact	Weighted Average	80	Don't match	<p>Addresses are broken into sections and compared by those sections. Each section has its own matching method and match score. The section scores are weighted to come up with one score for the field. This process works best with North American data.</p> <ul style="list-style-type: none"> <li>• Street Number (Exact, 20% of field's match score)</li> <li>• Street Name (Edit Distance, 50% of field's match score)</li> <li>• Street Suffix (Exact, 15% of field's match score)</li> <li>• Suite Number (Exact, 15% of field's match score)</li> </ul>

Field	Matching Algorithms	Scoring Method	Threshold	Blank Fields	Special Handling
					<p>For example, suppose these two billing streets are being compared: <i>123 Market Street, Suite 100</i> and <i>123 Market Drive, Suite 300</i>.</p> <p>Because only the street number and street name match, the field has a match score of 70, which is not considered a match because it's less than the threshold of 80.</p>
ZIP	Exact	Weighted Average	80	Don't match	<p>ZIP codes are broken into sections and compared by those sections. Each section has its own matching method and match score. The section scores are weighted to come up with one score for the field.</p> <ul style="list-style-type: none"> <li>• First 5 digits (Exact, 90% of field's match score)</li> <li>• Next 4 digits(Exact, 10% of field's match score)</li> </ul> <p>For example, suppose these two ZIP codes are being compared: <i>94104-1001</i> and <i>94104</i>.</p> <p>Because only the first 5 digits match, the field has a match score of 90, which is considered a match because it exceeds the threshold of 80.</p>
City	Edit Distance Exact	Maximum	85	Don't match	
Website	Exact	Maximum	100	Don't match	<p>Only the website domain is compared. For example, a field value <code>http://www.salesforce.com</code> becomes <code>salesforce.com</code>.</p>

## Matching Criteria for Matching Rules

Matching rules use criteria to determine how closely a field on a new or edited record matches the same field on an existing record, and, ultimately, whether the two records match. When you create a custom matching rule, you need to define certain criteria. Standard matching rules include additional criteria, all of which are defined for you.



 **Note:** This release contains a beta version of Data.com Duplicate Management that is production quality but has known limitations. You can provide feedback and suggestions on the [Salesforce Success Community](#). For information on enabling this feature for your organization, contact Salesforce.

### EDITIONS

Available in: both Salesforce Classic and Lightning Experience


Available in:

- Professional
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- Performance
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- Developer

Criterion	Definition	Automatically Defined for Custom Matching Rules
Field	<p>Indicates which field to compare. When selecting fields, keep in mind that:</p> <ul style="list-style-type: none"> <li>• The available fields depend on which object the matching rule applies to and include both standard and custom fields.</li> <li>• The supported input field types are email, lookup relationship, master-detail relationship, number, phone, standard picklists, custom picklists (single-select only), text, and URL.</li> <li>• An auto-numbered lookup relationship field cannot be used in a matching rule.</li> <li>• If you enable <code>State</code> and <code>Country</code> picklists for your organization, we recommend using <b>State/Province Code</b> and <b>Country Code</b> in your matching rules. These fields yield better duplicate detection results than the state and country text fields.</li> </ul>	
Matching Method	<p>Defines how the fields are compared. We've provided an exact matching method and various fuzzy matching methods. Each matching method is further defined by matching algorithms and other criteria.</p> <p>For more information about matching methods, see <a href="#">Matching Methods Used with Matching Rules</a> on page 20.</p>	
Matching Algorithm	<p>Defines the logic that determines whether 2 fields match. For the Exact matching method, the Exact matching algorithm is automatically used. For the Fuzzy matching method, various fuzzy matching algorithms can be used. Each matching algorithm used is automatically given a match score based on how closely it's able to match the two fields. For example, if you select Exact matching and the two fields match, the match score is 100. If the 2 fields don't match, the match score is 0.</p> <p>For more information about matching algorithms, see <a href="#">Matching Algorithms Used with Matching Methods</a> on page 23.</p>	
Match Blank Fields	<p>Specifies how blank fields affect whether the 2 fields being compared are considered matches. If you select the <code>Match Blank Fields</code> checkbox for any field, and that field is blank in <i>both</i> records being compared, the fields are considered matches. If, however, you select the <code>Match Blank Fields</code> checkbox for any field, and that field is blank in <i>only one</i> of the records being compared, the fields are not considered matches.</p> <p>If you don't select the <code>Match Blank Fields</code> checkbox for any field, and that field is blank in <i>both</i> records being compared, the fields are <i>not</i> considered matches.</p>	
Scoring Method	<p>Determines how the matching algorithms' match scores are calculated to come up with one match score for the field. Each matching algorithm used is automatically given a match score based on how closely it's able to match the two fields. Scoring method is used only by the standard matching rules.</p> <p><i>Average:</i> Uses the average match score.</p> <p><i>Maximum:</i> Uses the highest match score.</p> <p><i>Minimum:</i> Uses the lowest match score.</p>	

Criterion	Definition	Automatically Defined for Custom Matching Rules
	<i>Weighted Average</i> Uses the weight of each matching method to determine the average match score.	
Threshold	Determines the minimum match score needed for the field to be considered a match. The field is automatically given a match score based on how closely it matches the same field in an existing record.	✔
Match Key	A code that allows the matching rule to quickly return a list of possible duplicates. Once the matching rule is activated, the match key is automatically applied to all existing records so that when the matching rule runs, it's only looking for duplicates among records with the same match key. This process improves performance and returns a better set of match candidates.  For more information about match keys, including examples, see <a href="#">Match Keys and Matching Rules</a> on page 24.	✔

## Example

 **Example:** Assuming your custom contact matching rule includes the following criteria, here's how records are compared and matched.

- Matching equation is Email AND (Phone OR City).
- All fields use the Exact matching method.
- The Match Blanks Fields checkbox is selected for Phone and City.

### New Record A

Email	Phone	City
jdoe@salesforce.com	415-555-1234	San Francisco

### Existing Records Compared with New Record A

Record	Email	Email Match Score	Phone	Phone Match Score	City	City Match Score	Record Matches?
1	jdoe@salesforce.com	100	415-555-1234	100	none	0	Yes
2	jdoe@salesforce.com	100	none	0	San Francisco	100	Yes
3	jsmith@salesforce.com	0	415-555-1234	100	San Francisco	100	No
4	none	0	415-555-1234	100	Oakland	0	No
5	jdoe@salesforce.com	100	415-555-7777	0	San Jose	0	No

**New Record B**

Email	Phone	City
jdoe@salesforce.com	none	none

**Existing Records Compared with New Record B**

Record	Email	Email Match Score	Phone	Phone Match Score	City	City Match Score	Record Matches?
1	jdoe@salesforce.com	100	415-555-1234	0	none	100	Yes
2	jdoe@salesforce.com	100	none	100	San Francisco	0	Yes
3	jdoe@salesforce.com	100	none	100	none	100	Yes
4	jsmith@salesforce.com	0	415-555-1234	0	San Francisco	0	No
5	none	0	415-555-1234	0	Oakland	0	No

## Matching Methods Used with Matching Rules

The matching method is the part of the matching rule’s matching criteria that determines how a specific field in one record is compared to the same field in another record. We’ve provided an exact matching method and a variety of fuzzy matching methods.

**EDITIONS**

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  - Developer

Matching Method	Description
Exact	This method looks for strings that match a pattern exactly. If you’re using international data, we recommend you use the Exact matching method with your matching rules.
Fuzzy	This method looks for strings that match a pattern approximately. We’ve provided the logic for a variety of fuzzy matching methods.

For a definition of each matching criterion, see [Matching Criteria for Matching Rules](#) on page 17.

Fuzzy Matching Method	Matching Algorithms	Scoring Method	Threshold	Special Handling
Fuzzy: First Name	Exact Initials Jaro-Winkler	Maximum	85	The <code>Middle Name</code> field, if used in your matching rule, is compared by the Fuzzy: First Name matching method.



Fuzzy Matching Method	Matching Algorithms	Scoring Method	Threshold	Special Handling
	Name Variant			
Fuzzy: Last Name	Exact Keyboard Distance Metaphone 3	Maximum	90	
Fuzzy: Company Name	Acronym Exact Syllable Alignment	Maximum	70	Removes words such as <code>INC</code> and <code>CORP</code> before comparing fields. Also, company names are normalized. For example, <code>IBM</code> is normalized to <code>International Business Machines</code> .
Fuzzy: Phone	Exact	Weighted Average	80	<p>Phone numbers are broken into sections and compared by those sections. Each section has its own matching method and match score. The section scores are weighted to come up with one score for the field. This process works best with North American data.</p> <ul style="list-style-type: none"> <li>• International code (Exact, 10% of field's match score)</li> <li>• Area code (Exact, 50% of field's match score)</li> <li>• Next 3 digits (Exact, 30% of field's match score)</li> <li>• Last 4 digits (Exact, 10% of field's match score)</li> </ul> <p>For example, suppose these two phone numbers are being compared: <code>1-415-555-1234</code> and <code>1-415-555-5678</code>.</p> <p>All sections match exactly <i>except</i> the last 4 digits, so the field has a match score of 90, which is considered a match because it exceeds the threshold of 80.</p>
Fuzzy: City	Edit Distance Exact	Maximum	85	
Fuzzy: Street	Exact	Weighted Average	80	<p>Addresses are broken into sections and compared by those sections. Each section has its own matching method and match score. The section scores are weighted to come up with one score for the field. This process works best with North American data.</p> <ul style="list-style-type: none"> <li>• Street Name (Edit Distance, 50% of field's match score)</li> </ul>

Fuzzy Matching Method	Matching Algorithms	Scoring Method	Threshold	Special Handling
Fuzzy: ZIP	Exact	Weighted Average	80	<ul style="list-style-type: none"> <li>• Street Number (Exact, 20% of field’s match score)</li> <li>• Street Suffix (Exact, 15% of field’s match score)</li> <li>• Suite Number (Exact, 15% of field’s match score)</li> </ul> <p>For example, suppose these two billing streets are being compared: <i>123 Market Street, Suite 100</i> and <i>123 Market Drive, Suite 300</i>.</p> <p>Because only the street number and street name match, the field has a match score of 70, which is not considered a match because it’s less than the threshold of 80.</p> <p>ZIP codes are broken into sections and compared by those sections. Each section has its own matching method and match score. The section scores are weighted to come up with one score for the field.</p> <ul style="list-style-type: none"> <li>• First 5 digits (Exact, 90% of field’s match score)</li> <li>• Next 4 digits(Exact, 10% of field’s match score)</li> </ul> <p>For example, suppose these two ZIP codes are being compared: <i>94104-1001</i> and <i>94104</i>.</p> <p>Because only the first 5 digits match, the field has a match score of 90, which is considered a match because it exceeds the threshold of 80.</p>
Fuzzy: Title	Acronym Exact Kullback-Liebler Distance	Maximum	50	

## Matching Algorithms Used with Matching Methods

The matching method and matching algorithm are part of the matching rule's matching criteria. Together, they determine how a specific field in one record is compared to the same field in another record and whether the fields are considered matches.

We've provided an exact matching method and a variety of fuzzy matching methods. If the exact matching method is selected, then the exact matching algorithm is automatically used to compare the fields. If one of the fuzzy matching method is selected, then a variety of fuzzy matching algorithms is used to compare the fields. A field can be compared using more than one matching algorithm, and a matching score is given to each matching algorithm based on how closely it's able to match the fields. The fields being compared by the matching algorithms are *not* case sensitive.

For more information about the matching methods, see [Matching Methods Used with Matching Rules](#) on page 20.

### Matching Algorithms Available with Exact Matching Method

Matching Algorithm	Description
Exact	Determines whether two strings are the same. For example, salesforce.com and Salesforce are not considered a match because they're not exactly the same, and return a match score of 0.

### Matching Algorithms Available with Fuzzy Matching Methods

Matching Algorithm	Description
Acronym	Determines whether a business name matches its acronym. For example, Advanced Micro Devices and its acronym AMD are considered a match and return a match score of 100.
Edit Distance	Determines the similarity between two strings based on the number of deletions, insertions, and character replacements needed to transform one string into the other. For example, VP Sales matches VP of Sales with match score of 73.
Initials	Determines the similarity of two sets of initials in personal names. For example, the first name Jonathan and its initial J match and return a match score of 100.
Jaro-Winkler Distance	Determines the similarity between two strings based on the number of character replacements needed to transform one string into the other. This method is best for short strings, such as personal names. For example, Johnny matches Johny with a match score of 97.
Keyboard Distance	Determines the similarity between two strings based on the number of deletions, insertions, and character replacements needed to transform one string into the other, weighted by the position of the keys on the keyboard.
Kullback Liebler Distance	Determines the similarity between two strings based on the percentage of words in common. For example Director of Engineering matches Engineering Director with a match score of 65.
Metaphone 3	Determines the similarity between two strings based on their sounds. This algorithm attempts to account for the irregularities among languages and works well for first and last names. For example, Joseph matches Josef with a match score of 100.

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Matching Algorithm	Description
Name Variant	Determines whether two names are variation of each other. For example, Bob is a variation of Robert and returns a match score of 100. Bob is not a variation of Bill and returns a match score of 0.

## Match Keys and Matching Rules


Match keys are used to increase the effectiveness of matching rules. By understanding how match keys are created, you'll get a better sense of how matching rules work.

A *match key* is a code that allows a matching rule to quickly return a list of possible duplicates. After the matching rule is activated, the match key is automatically applied to all existing records so that when the matching rule runs, it's only looking for duplicates among records with the same match key. Also known as indexing, this process improves performance and returns a better set of match candidates.

The match keys for both standard and custom matching rules are automatically created based on the fields in the matching rule. Because each custom matching rule can have only 10 match keys, you're prevented from saving a matching rule that would require more than 10 match keys.

The process of creating match keys includes several steps.

1. The matching rule equation (that is, the arrangement of fields) is rewritten into a standardized format that translates OR statements into AND statements.
2. The fields are normalized using the same methods as standard matching rules. For details, see [Match Keys Used by Standard Matching Rules](#) on page 25.
3. The standardized field format and the normalized field values are combined to create the match keys.

 **Note:** We currently don't create match keys for the `Title` and `Address` fields. Therefore, if those fields are included in your matching rule, they won't generate match keys.

 **Example:** [Example](#)

Field Name	Field Value	Normalized Field Value
First Name	John	j
Email	john_oreilly@us.intel.com	joreilly@intelcom
Last Name	O'Reilly	arl
Company	Intel Corp.	intel

Matching Rule Equation	Standardized Format	Match Keys (Field Combinations)	Match Keys ( with Normalized Field Values)
(First Name OR Email) AND (Last Name OR Company)	(First Name AND Last Name) OR	First Name Last Name	jarl

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Matching Rule Equation	Standardized Format	Match Keys (Field Combinations)	Match Keys (with Normalized Field Values)
	(First Name AND Company) OR	First Name Company	jintel
	(Email AND Last Name) OR	Email Last Name	joreilly@intelcomarl
	(Email AND Company) OR	Email Company	joreilly@intelcomintel

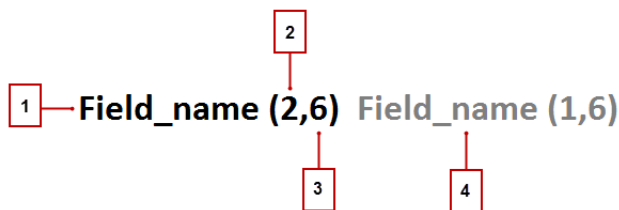
## Match Keys Used by Standard Matching Rules

Match keys are used to increase the effectiveness of matching rules. Review the match key information for a better understanding of how standard matching rules work.

### What is a Match Key?

A *match key* is a code that allows a matching rule to quickly return a list of possible duplicates. After the matching rule is activated, the match key is automatically applied to all existing records so that when the matching rule runs, it's only looking for duplicates among records with the same match key. Also known as indexing, this process improves performance and returns a better set of match candidates.

### How to Read a Match Key



- The field used in the match key (1)
- Number of tokens (or character string sets) in the field value to include in match key (2). If no number is present, then all tokens are included.
- Number of characters per token to include in the match key (3). If no number is present, then all characters are included.
- Additional field used in the match key (4)

### Normalization of Fields

Before the match keys are applied to any records, the field values of those records are normalized.

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Field	Normalization Details	Examples
Company	Expands acronyms. Lowercases first letter of each word. Removes suffixes, such as Corporation, Incorporated, Inc, Limited, Ltd. Removes stopwords and, the, of.	IBM = international business machines Intel Corp. = intel
First Name	Removes salutations and all but first letter of first word. Lowercases first letter. Replaces first name with alias, if applicable.	Dr. Jane = j Mr. Bob= robert = r
Last Name	Removes special characters and suffixes. Replaces consecutive identical consonants with single consonant. Lowercases first letter. After normalization, the double metaphone algorithm is applied so that misspellings and spelling variants are accounted for.	O'Reilly, Jr. = oreily (without double metaphone) O'Reilly, Jr. = oreily = arl (with double metaphone)
Email	Removes special characters, such as underscores and periods, from both parts of the email address.	john_doe@salesforce.com = jdoe@salesforcecom  john.doe@us.salesforce.com = jdoe@salesforcecom
Phone	Removes all non-digit and non-alpha characters. For all U.S. phone numbers, converts alpha characters to numeric characters and removes leading international code. Removes last four digits.	1-800-555-1234 = 800555 44 20 0540 0202 = 44200540
Website	Removes protocol (http), subdomain (www), and any file path. Then takes only the last two or three tokens, depending on if there are international designations.	http://www.us.salesforce.com/product = salesforce.com  http://www.ox.ac.uk/ = ox.ac.uk

## Pre-defined Match Keys

After fields are normalized, the following match keys are applied to all existing records. Also known as indexing, this process occurs when a matching rule is activated.

Match Key	Objects Applied To	Example
Company (2,6) City (, 6)	Account	Account: salesforce.com = salesf City: San Francisco = sanfra Key: salesfsanfra
Company (2,6) ZIP (1,3)	Account	Account Name: salesforce.com = salesf ZIP: 94105-5188 = 941 Key: salesf941
Email	Contact Lead	Email: john_doe@us.ibm.com = johndoe@ibm.com Key: johndoe@ibm.com

Match Key	Objects Applied To	Example
First_Name (1,1) Last_Name Email	Contact Lead	First Name: John = j Last: Doe = doe = t (with double metaphone applied) Email: john_doe@us.salesforce.com = johndoe@salesforce.com Key: jt@salesforce.com
First_Name (1,1) Last_Name Company (2,5)	Contact Lead	First Name: Marc = m Last Name: Benioff = pnf (with double metaphone applied) Company: salesforce.com = sales Key: mpnfsales
First_Name (1,1) Last_Name Phone	Contact Lead	First Name: Marc = m Last Name: Benioff = pnf (with double metaphone applied) Phone: 1-415-555-1234 = 415555 Key: mpnf415555
First_name (1,1) Last_Name Email (domain)	Contact Lead	First Name: Marc = m Last Name: Benioff = pnf (with double metaphone applied) Email: marc.benioff@salesforce.com = salesforce.com Key: mpnfsalesforce.com
Website City (_6)	Account	Website: https://www.salesforce.com = salesforce.com City: San Francisco = sanfra Key: salesforce.comsanfra
Website ZIP (1,3)	Account	Website: https://www.salesforce.com = salesforce.com ZIP: 94105-5188 = 941 Key: salesforce.com941

# DUPLICATE MANAGEMENT FAQS

Answers to common questions about Data.com Duplicate Management.

## IN THIS SECTION:

[Why am I getting an error saying my matching rule uses too many OR operators within groupings?](#)

[How does duplicate prevention work with Data.com Prospector and Data.com Clean?](#)

## Why am I getting an error saying my matching rule uses too many OR operators within groupings?

A matching rule has a limit of 10 fields that are arranged into an equation. When a matching rule is saved, we rewrite the equation into a standardized format that translates the OR statements to AND statements. The standardized format has a limit of 10 rows.



**Example:** If your matching rule includes the following equation...

(Field 1 OR Field 2) AND

(Field 3 OR Field 4) AND

(Field 5 OR Field 6) AND

(Field 7 OR Field 8)

...it would be rewritten as

(Field 1 AND Field 3 AND Field 5 AND Field 7) OR

(Field 1 AND Field 3 AND Field 5 AND Field 8) OR

(Field 1 AND Field 3 AND Field 6 AND Field 7) OR

(Field 1 AND Field 3 AND Field 6 AND Field 8) OR

(Field 1 AND Field 4 AND Field 5 AND Field 7) OR

(Field 1 AND Field 4 AND Field 5 AND Field 8) OR

(Field 1 AND Field 4 AND Field 6 AND Field 7) OR

(Field 1 AND Field 4 AND Field 6 AND Field 8) OR

(Field 2 AND Field 3 AND Field 5 AND Field 7) OR

(Field 2 AND Field 3 AND Field 5 AND Field 8) OR

(Field 2 AND Field 3 AND Field 6 AND Field 7) OR

(Field 2 AND Field 3 AND Field 6 AND Field 8) OR

(Field 2 AND Field 4 AND Field 5 AND Field 7) OR

(Field 2 AND Field 4 AND Field 5 AND Field 8) OR

(Field 2 AND Field 4 AND Field 6 AND Field 7) OR

## EDITIONS

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- Developer



(Field 2 AND Field 4 AND Field 6 AND Field 8)

Although this matching rule is within the field limit, it exceeds the row limit of 10 when written in the standardized format, and therefore can't be saved. You need to refine the matching rule so it uses fewer OR operators within groupings.

## How does duplicate prevention work with Data.com Prospector and Data.com Clean?

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### Adding Records with Data.com Prospector

It depends on what your organization's Data.com duplicate preferences are.

If your organization does not allow duplicate records to be added to Salesforce from Data.com, then Data.com will block duplicate records from being added to Salesforce and the duplicate rule won't need to run. The user trying to add records from Data.com will receive an error log detailing which records couldn't be added because they are duplicates.

If your organization allows duplicate records to be added to Salesforce from Data.com, then the duplicate rules will run. The duplicate rule will determine if the duplicate record is allowed or blocked. Records that are blocked by the duplicate rule will appear in the error log.

#### EDITIONS

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### Updating Records with Data.com Clean

It depends on what your organization's duplicate rules are. If your duplicate rule is set to block duplicates on edit, then a record can't be cleaned if cleaning creates a duplicate.

For Clean jobs, if your duplicate rule is set to block or alert, then a record can't be cleaned if the cleaning creates a duplicate. An entity error appears in the Clean Jobs History table for any record that can't be cleaned during a job.

If your duplicate rule is set to allow duplicates on edit, then a record can be cleaned even if it creates a duplicate. In addition, no alert displays when manually cleaning records even if your duplicate rule is set to alert.