Salesforce Shield Platform Encryption Implementation Guide

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STRENGTHEN YOUR DATA'S SECURITY WITH SHIELD PLATFORM ENCRYPTION

Shield Platform Encryption gives your data a whole new layer of security while preserving critical platform functionality. You can encrypt sensitive data at rest, and not just when transmitted over a network. So your company can confidently comply with privacy policies, regulatory requirements, and contractual obligations for handling private data.

Important: Where possible, we changed noninclusive terms to align with our company value of Equality. We maintained certain terms to avoid any effect on customer implementations.

Shield Platform Encryption builds on the classic encryption options that Salesforce offers all license holders. Data stored in many standard and custom fields and in files and attachments is encrypted using an advanced hardware security module (HSM)-based key derivation system. So it's protected even when other lines of defense are compromised.

Your data encryption key material is never saved or shared across orgs. You can choose to have Salesforce generate key material for you, or you can upload your own. By default, Shield Platform Encryption uses a key derivation function (KDF) to derive data encryption keys on demand from a primary secret and your org-specific key material. It then stores that derived data encryption key (DEK) in an encrypted key cache. DEKs are never stored on disk, and your org-specific key material is always wrapped.

You can also opt out of key derivation on a key-by-key basis. Or you can store your DEK outside of Salesforce and have the Cache-Only Key Service fetch it on demand from a key service that you control. The DEKs that you provide are always wrapped. No matter how you choose to manage your keys, Shield Platform Encryption secures your key material at every stage of the encryption process.

You can try out Shield Platform Encryption at no charge in Developer Edition orgs. It's available in sandboxes after it's provisioned for your production org.

Tip: Whether you're using Shield Platform Encryption or Classic Encryption, you can track the encryption policy status across your entire org. It's a simple process with the Security Center app, which can capture many useful security metrics. For more information, see Take Charge of Your Security Goals with Security Center.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

IN THIS SECTION:

Set Up Your Encryption Policy

An encryption policy is your plan for encrypting data with Shield Platform Encryption. You can choose how you want to implement it. For example, you can encrypt individual fields and apply different encryption schemes to those fields. Or you can choose to encrypt other data elements such as files and attachments, data in Chatter, or search indexes. Remember that encryption is not the same thing as field-level security or object-level security. Put those controls in place before you implement your encryption policy.

Filter Encrypted Data with Deterministic Encryption

You can filter data that's protected with Shield Platform Encryption using deterministic encryption. Your users can filter records in reports and list views, even when the underlying fields are encrypted. You can apply case-sensitive deterministic encryption or exact-match case-insensitive deterministic encryption to data on a field-by-field basis.

Key Management and Rotation

Shield Platform Encryption lets you control and rotate the key material used to encrypt your data. You can use Salesforce to generate a tenant secret for you, which is then combined with a per-release primary secret to derive a data encryption key. This derived data encryption key is then used in encryption and decryption functions. You can also use the Bring Your Own Key (BYOK) service to upload your own key material. Or you can store your key material outside of Salesforce and have the Cache-Only Key Service fetch your key material on demand.

Shield Platform Encryption Customizations

Some features and settings require adjustment before they work with encrypted data.

Tradeoffs and Limitations of Shield Platform Encryption

A security solution as powerful as Shield Platform Encryption doesn't come without some tradeoffs. When your data is encrypted, some users may see limitations to some functionality, and a few features aren't available at all. Consider the impact on your users and your overall business solution as you design your encryption strategy.

What You Can Encrypt

Shield Platform Encryption lets you encrypt a wide variety of standard fields and custom fields. You can also encrypt files and attachments stored in Salesforce, Salesforce search indexes, and more. We continue to make more fields and files available for encryption.

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IN THIS SECTION:

Which Standard Fields Can I Encrypt?

You can encrypt certain fields on standard and custom objects, data in Chatter, and search index files. With some exceptions, encrypted fields work normally throughout the Salesforce user interface, business processes, and APIs.

Which Custom Fields Can I Encrypt?

You can apply Shield Platform Encryption to the contents of fields that belong to one of these custom field types.

Which Files Are Encrypted?

When you enable Shield Platform Encryption for files and attachments, all files and attachments that can be encrypted are encrypted. The body of each file or attachment is encrypted when it's uploaded.

What Other Data Elements Can I Encrypt?

In addition to standard and custom field data and files, Shield Platform Encryption supports other Salesforce data. You can encrypt CRM Analytics datasets, Chatter fields, fields in the Salesforce B2B Commerce managed package, and more.

Which Standard Fields Can I Encrypt?

You can encrypt certain fields on standard and custom objects, data in Chatter, and search index files. With some exceptions, encrypted fields work normally throughout the Salesforce user interface, business processes, and APIs.

When you encrypt a field, existing values aren't encrypted immediately. Values are encrypted only after they're touched or after they're synchronized with the latest encryption policy. Synchronize existing data with your policy from Setup on the Encryption Statistics page.

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Compatible Standard Fields

You can encrypt the contents of these standard field types.

Object	Fields	Notes
Account Participant	Comments	The Account Participant object is available in select Salesforce Industries products.
Accounts	Account Name Account Site Billing Address (encrypts Billing Street and Billing City) Description Fax Phone Shipping Address (encrypts Shipping Street and Shipping City) Website	If you enabled Person Accounts, certain account and contact fields are combined into one record. In that case, you can enable encryption for a different set of Account fields.
Accounts with Person Accounts enabled	Account Name Account Site Assistant Assistant Phone Billing Address (encrypts Billing Street and Billing City) Description Email Fax Home Phone Mailing Address (encrypts Mailing Street and Mailing City)	

Object	Fields	Notes
	Mobile Other Address (encrypts Other Street and Other City) Other Phone Phone Shipping Address (encrypts Shipping Street and Shipping City) Title Website	
Activity	Description (encrypts Event—Description and Task—Comment) Subject (encrypts Event—Subject and Task—Subject)	Selecting an Activity field encrypts that field on standalone events, event series (Lightning Experience), and recurring events (Salesforce Classic).
AI Natural Language Process Chunk Result	Additional Information Response	
AI Natural Language Process Result	Additional Information Response	
Applicant	Birth Date Email First Name Last Name Middle Name Phone Prefix Suffix Unique Reference Number	
Application Form	Submission Date	
Assessment Question Response	Choice Value Date Value Date Time Value Response Text Response Value	

Object	Fields	Notes
Authorization Form	Name	
Authorization Form Consent	Name	
Authorization Form Data Use	Name	
Authorization Form Text	Name	
Business License	Identifier	Emergency Response Management for Public Sector standard objects and fields are available to users who have the Emergency Response for Public Sector permission set license.
Business License Application	Site Address (encrypts Site Street and Site City)	
Business Profile	Business Operating Name Business Tax Identifier	
Cases	Description Subject	
Case Comments	Body (including internal comments)	
Chat Transcript	Body Supervisor Transcript Body	Before you can apply encryption to Chat fields, add the Supervisor Transcript Body field to the LiveChatTranscript record home layout.
Contact Point Address	Address	
Contact Point Email	Email address	
Contact Point Phone	Telephone number	
Contacts	Assistant Assistant Phone Description Email Fax Home Phone Mailing Address (encrypts Mailing Street and Mailing City) Mobile Name (encrypts First Name, Middle Name, and Last Name) Other Address (encrypts Other Street and Other City) Other Phone Phone	

Object	Fields	Notes
	Title	
Contracts	Billing Address (encrypts Billing Street and Billing City) Shipping Address (encrypts Shipping Street and Shipping City)	
Conversation Context Entry	Key Value	
Conversation Entry	Actor Name Message	
Conversation Participant	Participant Display Name	
Course Offering	Name	Emergency Response Management for Public Sector standard objects and fields are available to users who have the Emergency Response for Public Sector permission set license.
Custom Objects	Name	
Email Messages	From Name From Name To Address CC Address BCC Address Subject Text Body HTML Body Headers	If you use Email-to-Case, these fields are also encrypted on the customer emails that generate cases.
Email Message Relations	Relation Address	
Flow Orchestration Work Item	Screen Flow Inputs	
Identity Document	Document Number Expiration Date Issue Date	
Individual	Name	The Individual object is available only if you enable the setting to make data protection details available in records.

Object	Fields	Notes
Leads	Address (Encrypts Street and City) Company Description Email Fax Mobile Name (Encrypts First Name, Middle Name, and Last Name) Phone Title Website	
List Emails	From Name From Address Reply To Address	
List Email Sent Results	Email	
Loan Applicant	Loan Applicant Name	
Loan Applicant Address	Residence Address	
Messaging End User	Messaging Platform Key Name Profile Picture URL	
OCR Document Scan Result	Extracted Values	
OCR Scan Result Template Mapping	Mapped Fields	
Opportunities	Description Next Step Opportunity Name	
Opportunity Participant	Comments	The Opportunity Participant object is available in select Salesforce Industries products.
Payment Instrument	Bank Account Name	—
Public Complaint	Business Address Business Name	Emergency Response Management for Public Sector standard objects and fields are available to users who have the Emergency

Object	Fields	Notes
	Email First Name Last Name Mobile Number	Response for Public Sector permission set license.
Recommendations	Description	
Referral	Client Email Client Name Client Phone Provider Email Provider Name Provider Phone Referrer Email Referrer Name Referrer Phone	
Regulatory Code Violation	Corrective Action Description Description	Emergency Response Management for Public Sector standard objects and fields are available to users who have the Emergency Response for Public Sector permission set license.
Service Appointments	Address (Encrypts Street and City) Description Subject	
Social Persona	Bio Profile URL Provider External Picture URL Real Name	Before you can apply encryption to Social Persona fields, make sure that Social Customer Service is enabled and connected to a Marketing Cloud Social service.
Social Post	Attachment URL Headline Message Post URL Social Handle	Before you can apply encryption to Social Post fields, make sure that Social Customer Service is enabled and connected to a Marketing Cloud Social service.
Survey Question Response	Date Value	

Object	Fields	Notes
	Date Time Value Choice Value Response Value	
Training Course	Description Name	Emergency Response Management for Public Sector standard objects and fields are available to users who have the Emergency Response for Public Sector permission set license.
User	Email	
Utterance Suggestion	Utterance	
Video Call	Description End Date Time Start Date Time Vendor Meeting Uuid	
Video Call Participant	Email Join Date Time Leave Date Time	
Violation Enforcement Action	Description	Emergency Response Management for Public Sector standard objects and fields are available to users who have the Emergency Response for Public Sector permission set license.
Voice Call	FromPhoneNumber ToPhoneNumber	
Web Quote	Introduction Notes Ship to City Ship to Country Ship to Name Ship to Postal Code Ship to State Ship to Street Description Product Code	

Object	Fields	Notes
Work Orders	Address (Encrypts Street and City) Description Subject	
Work Order Line Items	Address (Encrypts Street and City) Description Subject	

Compatible Automotive Cloud Fields

Automotive Cloud standard objects and fields are available to users who have the Automotive Foundation User and the Vehicle and Asset Finance permission sets.

Object	Fields
Financial Account	Financial Account Number Name

Compatible Health Cloud Fields

Health Cloud standard objects and fields are available to users who have the Health Cloud Platform permission set license.

Note: Deterministic encryption is unavailable for long text fields and fields that have Notes in the name.

Object	Fields
Care Plan Template Problem	Name
Care Program Enrollee	Name
Care Program Enrollee Product	Name
Care Program Provider	Name
Care Request	Admission Notes Disposition Notes Facility Record Number First Reviewer Notes Medical Director Notes Member First Name

Object	Fields
	Member Last Name Member ID Member Group Number Resolution Notes Root Cause Notes
Care Request Drug	Prescription Number
Care Specialty	Name
Contact Encounter	Name
Coverage Benefit	Benefit Notes Coinsurance Notes Copay Notes Deductible Notes Lifetime Maximum Notes Name Out-of-Pocket Notes Source System Identifier
Coverage Benefit Item	Coverage Level Notes Service Type Service Type Code Source System Identifier
Healthcare Provider Specialty	Name
Healthcare Provider Treated Condition	Name
Member Plan	Affiliation Group Number Issuer Number Member Number Name Primary Care Physician Source System Identifier

Object	Fields
Purchaser Plan	Name

Compatible Financial Services Cloud Fields

Financial Services Cloud standard objects and fields are available to users who have Financial Services Cloud enabled.

Object	Fields
Financial Deal	Description Financial Deal Code Name
Interaction	Comment Name
Interaction Attendee	Email Address
Interaction Summary	Comment
Interaction Related Account	Comment
Interaction Summary	Next Steps Meeting Notes Title
Interaction Summary Discussed Account	Comment

Compatible Grantmaking Fields

Grantmaking standard objects and fields are available to users who have Grantmaking enabled.

Object	Fields
Budget Participant	Comments
Funding Award Participant	Comments
Funding Opportunity Participant	Comments
Individual Application Participant	Comments
Individual Application Task Participant	Comments

Compatible Insurance for Financial Services Cloud Fields

Insurance for Financial Services Cloud standard objects and fields are available to users who have Financial Services Cloud enabled.

Object	Fields
Business Milestone	Milestone Description Milestone Name
Claim	Claim Number Incident Site Report Number
Customer Property	Address Lien Holder Name
Insurance Policy	Policy Number Servicing Office Universal Policy Number
Person Life Event	Event Description Event Name
Securities Holding	Name

Compatible Loyalty Management Fields

Loyalty Management standard objects and fields are available to users who have Loyalty Management enabled.

Shield Platform Encryption Supported Objects	Fields
Loyalty Program Group Member Relationship	Member Name

Compatible Nonprofit Cloud Fields

Nonprofit Cloud standard objects and fields are available to users who have Nonprofit Cloud features enabled.

Object	Fields
Gift Entry	City Country Email Expiry Month Expiry Year First Name Home Phone

Object	Fields
	Last 4 Last Name Mobile Phone Organization Name State/Province Street
Payment Instrument	Bank Account Number

Compatible Salesforce CPQ Fields

Salesforce CPQ standard objects and fields are available to users who have the Salesforce CPQ permission set license.

Object	Fields
Lookup Data	Lookup Data
Process Input Value	Value
Quote	Bill To City Bill To Country Bill To Name Bill To Postal Code Bill To State Bill To Street Introduction Notes Ship To City Ship To Country Ship To Name Ship To Postal Code Ship To State Ship To Street
Quote Template	Company Name
Quote Term	Body
Tax Exemption Certificate	Certificate Number Country County

Object	Fields
	Exempt Company Name Notes Postal Code State Street Address Street Address_2

Compatible Workplace Command Center Fields

Object	Fields	Notes
Employee	Alternate Email Email First Name Home Address Home Phone Last Name Middle Name Preferred First Name Work Phone	To enable encryption on the Employee object, contact Salesforce Customer Support.

Which Custom Fields Can I Encrypt?

You can apply Shield Platform Encryption to the contents of fields that belong to one of these custom field types.

- Email
- Phone
- Text
- Text Area
- Text Area (Long)
- Text Area (Rich)
- URL
- Date
- Date/Time

After a custom field is encrypted, you can't change the field type. For custom phone and email fields, you also can't change the field format.

Important: When you encrypt the Name field, enhanced lookups are automatically enabled. Enhanced lookups improve the user's experience by searching only through records that have been looked up recently, and not all existing records. Switching to enhanced lookups is a one-way change. You can't go back to standard lookups, even if you disable encryption.

You can't use Schema Builder to create an encrypted custom field.

To encrypt custom fields that have the `Unique` or `External ID` attribute, you can only use deterministic encryption.

Unsupported Custom Fields

Some custom fields can't be encrypted.

- Fields on external data objects
- Fields that are used in an account contact relation
- Fields with data translation enabled
- Rich Text Area fields on Knowledge Articles

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Which Files Are Encrypted?

When you enable Shield Platform Encryption for files and attachments, all files and attachments that can be encrypted are encrypted. The body of each file or attachment is encrypted when it's uploaded.

EDITIONS

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Available in both Salesforce Classic and Lightning Experience.

These kinds of files are encrypted when you enable file encryption:

- Files attached to email
- Files attached to feeds
- Files attached to records
- Images included in Rich Text Area fields
- Files on the Content, Libraries, and Files tabs (Salesforce Files, including file previews, and Salesforce CRM Content files)
- Files managed with Salesforce Files Sync and stored in Salesforce
- Files attached to Chatter posts, comments, and the sidebar
- Notes body text using the new Notes tool
- Files attached to Knowledge articles
- Quote PDFs

These file types and attachments aren't encrypted:

- Chatter group photos
- Chatter profile photos
- Documents
- Notes previews in the new Notes tool
- Notes and Notes previews in the old Notes tool

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What Other Data Elements Can I Encrypt?

In addition to standard and custom field data and files, Shield Platform Encryption supports other Salesforce data. You can encrypt CRM Analytics datasets, Chatter fields, fields in the Salesforce B2B Commerce managed package, and more.

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Change Data Capture

Change Data Capture provides near-real-time changes of Salesforce records, enabling you to synchronize corresponding records in an external data store. If a Salesforce record field is encrypted with Shield Platform Encryption, changes to encrypted field values generate change events. You can encrypt these change events by selecting **Encrypt and deliver Change Data Capture events** on the Encryption Policy page in Setup.

Chatter Feed

Encrypted Chatter data includes data in feed posts and comments, questions and answers, link names and URLs. It also includes poll choices and questions, and content from your custom rich publisher apps.

The revision history of encrypted Chatter fields is also encrypted. If you edit or update an encrypted Chatter field, the old information remains encrypted.

Chatter data is stored in the Feed Attachment, Feed Comment, Feed Poll Choice, Feed Post, and Feed Revision objects. The database fields on these objects that house encrypted data is visible from the Encryption Statistics page in Setup.

- ChatterExtensionInstance—Payload
- ChatterExtensionInstance—PayloadVersion
- ChatterExtensionInstance—TextRepresentation
- ChatterExtensionInstance—ThumbnailUrl
- ChatterExtensionInstance—Title
- FeedAttachment—Title
- FeedAttachment—Value
- FeedComment—RawCommentBody
- FeedPollChoice—ChoiceBody
- FeedPost—LinkUrl
- FeedPost—RawBody
- FeedPost—Title
- FeedRevision—RawValue

Some fields listed in the Encryption Statistics aren't visible in the UI by the same name. However, they store all encrypted data that's visible in the UI.

Note: Enabling Encryption for Chatter encrypts all eligible Chatter fields. You can't choose to encrypt only some Chatter fields.

CRM Analytics

Encrypts new CRM Analytics datasets.

Note: Data that was in CRM Analytics before encryption was enabled isn't encrypted. If existing data is imported from Salesforce objects through the dataflow, the data becomes encrypted on the next dataflow run. Other existing data (such as CSV data) must be reimported to become encrypted. Although existing data isn't encrypted, it's still accessible and fully functional in its unencrypted state when encryption is enabled.

Salesforce B2B Commerce

Shield Platform Encryption for B2B Commerce (version 4.10 and later) adds an extra layer of security to the data your customers enter in Salesforce B2B Commerce ecommerce storefronts. For a list of the supported fields, see Shield Platform Encryption for B2B Commerce.

Search Indexes

When you encrypt search indexes, each file created to store search results is encrypted.

Platform Encryption Q&A

Here are some frequently asked questions about platform encryption.

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What are the hardware and software requirements for using Platform Encryption?

None. The crypto functions run natively on the Salesforce platform. No custom code is required to encrypt or decrypt data.

Must I encrypt all of my data when using Platform Encryption?

No. Not all data is sensitive, so encryption isn't always required. Also, unnecessarily encrypting data can affect performance and functionality.

When I enable Platform Encryption, how are my existing encrypted fields affected?

The Platform Encryption process doesn't affect fields encrypted using Classic Encryption.

What encryption algorithm is used with Platform Encryption?

The Platform Encryption uses symmetric key encryption and a 256-bit Advanced Encryption Standard (AES) algorithm to encrypt field-level data and files stored on the Salesforce platform. Data encryption and decryption occur on the application servers. Encryption is integrated into the Salesforce application so the application knows when data must be encrypted or decrypted. Whether you're accessing data through the user interface or the API, encryption and decryption are handled the same way.

Can I access tenant secrets using the API?

Yes. For example, you can use the API to define an automatic process to rotate the Platform Encryption key regularly. For detailed information, search for TenantSecret in the *Object Reference for Salesforce and Lightning Platform*.

Do data encryption keys held in memory rotate automatically when Salesforce rotates the master secret?

No. While Salesforce rotates the master secret on a per-release basis, customers' data encryption keys aren't impacted. No new data encryption key is derived automatically.

I use Platform Encryption, and the Encrypted checkbox isn't visible when I create or edit an existing custom field. Why?

Only Email, Phone, Text, Text Area, Text Area (Long), Text Area (Rich), Date, Date/Time and URL custom field types are available for encryption.

What happens to existing data if I rotate a tenant secret?

When you generate a new tenant secret, existing encrypted data remains encrypted and accessible as long as the old tenant secret isn't destroyed. New data is encrypted using the new tenant secret. There's no functional difference to the user.

How finely can I control what data is encrypted with Platform Encryption?

For field data, you control which supported standard and custom fields to encrypt. For files and attachments, you control whether encryption is enabled in your organization.

If I enable Platform Encryption, is the format for custom phone, email, and URL fields preserved?

Yes, formats for custom phone, email, and URL fields are preserved when they're encrypted.

Are the Hardware Security Module (HSM) network appliances shared by multiple tenants?

Yes. Key material produced by an HSM is either a per-release secret or a per-tenant secret. Both are required to encrypt your data, so no two tenants have the same data encryption keys.

Do third-party vendors have access to the Hardware Security Modules (HSM)?

No. Salesforce controls access to the HSMs exclusively.

How long are the tenant secret, primary secret, and data encryption keys?

256 bits in length.

Where is my data encryption key stored?

The keys are stored only in memory and never persisted on disk.

What is the limit for how many keys we can have?

You can have up to 50 active and archived tenant secrets of each type. For example, you can have one active and 49 archived Fields and Files (Probabilistic) tenant secrets, and the same number of Analytics tenant secrets. This limit includes Salesforce-generated and customer-supplied key material.

What if I already have too many active and archived secrets?

If you run into the 50 limit, review your encryption coverage statistics to find our your active key coverage. Choose one or more keys to destroy. Don't destroy any of them until you synchronize the data they encrypt with an active key.

How is my organization-specific key generated?

The data encryption keys are derived by a key derivation function (KDF) that combines a primary secret with an organization-specific tenant secret and a randomly generated 128-bit string.

Where are encryption policies defined?

Your organization defines its own policies.

Can I re-encrypt encrypted data?

Yes. You can review your encryption coverage statistics to find our your active key coverage. Then if you want, you can synchronize the encryption of your data with the most recent tenant secret using the Background Encryption Service.

Can a Platform Encryption key be shared across more than one organization?

No. Encryption keys are specific to an organization and can't be shared with other organizations.

Does encrypting fields, files, and attachments with Platform Encryption count against my organization's storage limits?

No. Encryption and decryption do count against your organization's per-transaction Apex limits, but they aren't counted as separate transactions.

If I can see encrypted data, can Salesforce Support representatives also see the data?

Yes, if they have access to the object, record and field.

How Shield Platform Encryption Works

Shield Platform Encryption relies on a unique tenant secret that you control and a primary secret that Salesforce maintains. By default, we combine these secrets to create your unique data encryption key (DEK). You can also supply your own final DEK. We use your DEK to encrypt data that your users put into Salesforce, and we use it to decrypt data when your authorized users need it.

Important: Where possible, we changed noninclusive terms to align with our company value of Equality. We maintained certain terms to avoid any effect on customer implementations.

Encrypting files, fields, and attachments doesn't affect your org's storage limits.

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IN THIS SECTION:

Why Bring Your Own Key?

Shield Platform Encryption's Bring Your Own Key (BYOK) feature gives you an extra layer of protection if there's unauthorized access to critical data. It can also help you meet the regulatory requirements that come with handling financial, health, or personal data. After you set up your key material, use Shield Platform Encryption as you normally would to encrypt data at rest in your Salesforce org.

Why Isn't My Encrypted Data Masked?

If the Shield Platform Encryption service isn't available, data is masked in some types of encrypted fields. This is to help you troubleshoot encryption key issues, not to control user access to data. If you have data that you don't want some users to see, revisit those users' field-level security settings, record access settings, and object permissions.

Shield Platform Encryption in Hyperforce

Shield Platform Encryption operates in parallel with volume-level encryption. By default, Hyperforce provides volume-level encryption for data at rest. Volume-level encryption protects all the data on a disk with one encryption key, which Salesforce owns and manages. With Shield Platform Encryption, you can encrypt your data in Hyperforce with unique keys that you control and manage.

How Do I Deploy Shield Platform Encryption?

When you deploy Shield Platform Encryption to your org with a tool such as Salesforce Extensions for Visual Studio Code, Migration Tool, or Postman, the Encrypted field attribute persists. However, if you deploy to orgs with different encryption settings, the effect depends on whether Shield Platform Encryption is enabled in the target org.

Shield Platform Encryption Terminology

Encryption has its own specialized vocabulary. To get the most out of your Shield Platform Encryption features, it's a good idea to familiarize yourself with key terminology.

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Cache Key Encrypting Key (Cache KEK)
Data encryption keys temporarily reside in the encrypted key cache for deriving final data encryption keys. The cache KEK encrypts these components while they're in the cache.

Data Encryption
The process of applying a cryptographic function to data that results in ciphertext. The Shield Platform Encryption process uses symmetric key encryption, a 256-bit Advanced Encryption Standard (AES) algorithm that uses cipher block chaining (CBC) mode, and a randomized 128-bit initialization vector (IV) to encrypt data stored on the Salesforce Platform. Data encryption and decryption occur on the application servers.

Data Encryption Key (DEK)
Shield Platform Encryption uses DEKs to encrypt and decrypt data. DEKs are derived on the key management servers (KMS). They use key material split between a per-release primary secret and an org-specific tenant secret stored encrypted in the database. The 256-bit derived keys use a key derivation function (KDF) and exist in memory until evicted from the cache.

Encrypted Data at Rest
Data that's encrypted when persisted on disk. Salesforce supports encryption for fields stored in the database; documents stored in files, content, libraries, and attachments; search index files; CRM Analytics datasets; and archived data.

Encryption Key Management
All aspects of key management, such as key generation, processes, and storage. Administrators or users who have the Manage Encryption Keys permission can work with Shield Platform Encryption key material.

Hardware Security Module (HSM)

A secure network appliance that provides cryptography processing and key management for authentication. Shield Platform Encryption uses HSMs to generate and store primary and per-release secret material. HSMs also run the key derivation function that derives DEKs used by the encryption service to encrypt and decrypt data. Salesforce uses FIPS 140-2 Level 3 certified HSM devices. HSMs reside within the primary and regional key management servers (KMSs).

High Assurance Virtual Ceremony (HAVC)

A secure meeting among Salesforce Cryptographic officers. During the HAVC, the cryptographic officers convene in secure facilities to generate the per-release secrets material by using the primary HSM. The per-release secrets are then stored within the primary KMS.

Initialization Vector (IV)

Also known as search index. A random sequence used with a key to encrypt data. Shield Platform Encryption IVs are generally 128 bits (16 bytes) in size.

Key Derivation

The process of creating highly secure encryption keys from highly secure key material components. Keys used for encrypting, signing, and decrypting your data, known as the Data Encyrption Keys, are derived by using up to 3 cryptographic components: KDF seed, tenant secret, and initialization vector. These components are stored in separate secure locations. A derived key is never stored on disk, which increases its security.

Key Derivation Function (KDF)

The cryptographic algorithm that Shield Platform Encryption uses to generate DEKs. KDFs take as input one or more secrets and a random IV to derive DEKs. Shield Platform Encryption uses Password-based Key Derivation Function 2 (PBKDF2) with HMAC-SHA-256.

Key Rotation

The process of generating a new tenant secret and archiving the previously active one. Active tenant secrets are used for encryption and decryption. Archived ones are used only for decryption until all data has been re-encrypted by using the new, active tenant secret.

Primary HSM

The HSM that resides in the primary key management server (KMS). It generates secure, random secrets for each Salesforce release. The primary HSM is under a strict access protocol and is available to create secrets only through the coordinated actions of multiple trusted cryptographic officers

Primary Secret (KDF Seed)

Formerly master secret. Used with the tenant secret and key derivation function to generate a derived data encryption key. (Customers can opt out of key derivation.) The primary secret is rotated each release by using an HSM. No Salesforce employees have access to these keys in cleartext.

Primary Initialization Vector (KDF Salt)

Initialization vector created each release by the primary HSM. Used in conjunction with organization tenant secrets to derive data encryption keys.

Key Wrapping Key (KWK)

A derived symmetric key used to encrypt other keys for secure storage and transport. A primary KWK is used to encrypt the KDF seed, KDF salt, tenant wrapping key, and transit wrapping private key (for Transaction Layer Security, TLS) before they're stored in the regional KMS.

Tenant Secret

An organization-specific secret used in conjunction with the primary secret and key derivation function (KDF) to generate a derived data encryption key (DEK). No Salesforce employees have access to these keys in cleartext.

SEE ALSO:

How Key Material Is Stored

Components Involved in Deriving Keys

Encryption keys are derived with a combination of hardware security modules (HSMs) and key derivation servers.

Important: Where possible, we changed noninclusive terms to align with our company value of Equality. We maintained certain terms to avoid any effect on customer implementations.

Primary HSM (nShield® Connect HSM model XC).

A FIPS 140-2 Level 3 hardware-compliant network appliance that generates per-release secrets and secret-wrapping keys and signs the public keys of regional HSMs. The primary HSM is located in the primary KMS. Access to the HSM is controlled through a High Assurance Virtual Ceremony (HAVC).

The primary HSM public signing key is used to sign and verify each regional HSM's public encryption key. At the start of each release, the primary and regional HSM public encryption keys are used to separately encrypt a per-release primary key wrapping key, which is used to encrypt the remainder of the per-release secrets used to derive data encryption keys.

Shield KMS Server

Shield Platform Encryption uses a single primary KMS and multiple regional KMSs. The primary KMS is the first KMS to receive the per-release secrets. It makes those secrets available to pegional KMSs, and it services key material requests like any regional KMS server.

Application servers.

Servers in production environments that run Salesforce. When a customer attempts to read or write encrypted data or generate a tenant secret, the application server communicates with a regional KMS to process the request.

Salesforce search index.

Servers in production environments that manage Salesforce searches. When a user attempts to query encrypted data, the search index processes the request.

What's the Difference Between Classic Encryption and Shield Platform Encryption?

With Shield Platform Encryption, you can encrypt a variety of widely used standard fields, along with some custom fields and many kinds of files. Shield Platform Encryption also supports person accounts, cases, search, approval processes, and other key Salesforce features. Classic encryption lets you protect only a special type of custom text field, which you create for that purpose.

Feature	Classic Encryption	Platform Encryption
Pricing	Included in base user license	Additional fee applies
Encryption at Rest	✔	✔
Native Solution (No Hardware or Software Required)	✔	✔
Encryption Algorithm	128-bit Advanced Encryption Standard (AES)	256-bit Advanced Encryption Standard: AES CBC (Field-Level Encryption), AES CTC (Search Index Encryption)

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

Feature	Classic Encryption	Platform Encryption
HSM-based Key Derivation	✗	✓
Manage Encryption Keys Permission	✗	✓
Generate Keys	✓	✓
Export, Import, and Destroy Keys	✓	✓
Advanced Key Options	✗	BYOK, Cache-only Keys
PCI-DSS L1 Compliance	✓	✓
Masking	✓	✗ No (Why Isn't my Encrypted Data Masked?)
Mask Types and Characters	✓	✗
View Encrypted Data Permission Required to Read Encrypted Field Values	✓	✗
Encrypted Standard Fields	✗	✓ Limited (What Standard Fields Can You Encrypt?)
Encrypted Attachments, Files, and Content	✗	✓
Encrypted Custom Fields	Dedicated custom field type, limited to 175 characters	✓ Limited (What Custom Fields Can You Encrypt?)
Encrypt Existing Fields for Supported Custom Field Types	✗	✓
Encrypt Custom Metadata and Apex	✓	✓
Search, Filters and Queries	✗	✓ UI, Partial Search, Lookups, Certain SOSL Queries. Certain SOQL Queries with Deterministic
Sorting		
Available in Workflow Rules and Workflow Field Updates	✗	✓
Available in Approval Process Entry Criteria and Approval Step Criteria	✗	✓

How Key Material Is Stored

The critical components of the Security Platform Encryption architecture—the KDF secrets, KDF salt, wrapping keys, and DEKs—are secured using a tiered structure that incorporates wrapped keys, signing, and key derivation.

Important: Where possible, we changed noninclusive terms to align with our company value of Equality. We maintained certain terms to avoid any effect on customer implementations.

These artifacts, essential participants in the architecture, are stored:

- Securely on disk in the Salesforce Key Management Server (KMS)
- On the Salesforce application server
- In your database as wrapped units (such as a public key)
- In the Data Encryption Key (DEK) cache

Also, these artifacts can be derived as needed from other wrapped artifacts.

The Salesforce encryption key management process ensures that at no time is any security artifact stored unprotected. We use various methods to protect each type of security artifact.

EDITIONS

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Available in both Salesforce Classic and Lightning Experience.

Primary HSM (nShield® Connect HSM model XC).

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The primary HSM public signing key is used to sign and verify each regional HSM's public encryption key. At the start of each release, the primary and regional HSM public encryption keys are used to separately encrypt a per-release primary key wrapping key, which is used to encrypt the remainder of the per-release secrets used to derive data encryption keys.

Shield KMS Server

Shield Platform Encryption uses a single primary KMS and multiple regional KMSs. The primary KMS is the first KMS to receive the per-release secrets. It makes those secrets available to pegional KMSs, and it services key material requests like any regional KMS server.

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Servers in production environments that run Salesforce. When a customer attempts to read or write encrypted data or generate a tenant secret, the application server communicates with a regional KMS to process the request.

Salesforce search index.

Servers in production environments that manage Salesforce searches. When a user attempts to query encrypted data, the search index processes the request.

Behind the Scenes: The Shield Platform Encryption Process

When users submit data, the application server looks for the org-specific data encryption key (DEK) in its cache. If it isn't there, the application server gets the encrypted tenant secret from the database and asks the regional key management server (KMS) to derive the key. The Shield Platform Encryption service then encrypts the data on the application server. If customers opt out of key derivation or use the Cache-Only Key Service, the encryption service applies the customer-supplied data encryption key directly to customer data.

Important: Where possible, we changed noninclusive terms to align with our company value of Equality. We maintained certain terms to avoid any effect on customer implementations.

Salesforce securely generates the primary and tenant secrets by using hardware security modules (HSMs). The unique key is derived by using PBKDF2, a key derivation function (KDF), with the primary and tenant secrets as inputs.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

Shield Platform Encryption Process Flow

- When a Salesforce user saves encrypted data, the runtime engine determines from metadata whether to encrypt the field, file, or attachment before storing it in the database.
- If so, the encryption service checks for the matching data encryption key in cached memory.
- The encryption service determines whether the key exists.
  - If so, the encryption service retrieves the key.
  - If not, the service sends a derivation request to the regional KMS and returns it to the encryption service running on the Salesforce Platform.
- After retrieving or deriving the key, the encryption service generates a random initialization vector (IV) and encrypts the data by using 256-bit AES encryption.

- The ciphertext is saved in the database or file storage. The IV and corresponding ID of the tenant secret used to derive the data encryption key are saved in the database. Salesforce generates a new primary secret at the start of each release.

Behind the Scenes: The Search Index Encryption Process

The Salesforce search engine is built on the open-source enterprise search platform software Apache Solr. The search index, which stores tokens of record data with links back to the original records stored in the database, is housed within Solr. Partitions divide the search index into segments to allow Salesforce to scale operations. Apache Lucene is used for its core library.

Using Shield Platform Encryption's HSM-based key derivation architecture, metadata, and configurations, Search Index Encryption runs when Shield Platform Encryption is in use. The solution applies strong encryption on an org-specific search index (.fdt, .tim, and .tip file types) using an org-specific AES-256 bit encryption key. The search index is encrypted at the search index segment level, and all search index operations require index blocks to be encrypted in memory.

The only way to access the search index or the key cache is through programmatic APIs.

A Salesforce security administrator can enable Search Index Encryption from Setup. The administrator first creates a tenant secret of the Search Index type, then enables Encryption for Search Indexes. The admin configures their encryption policy by selecting fields and files to encrypt. An org-specific HSM-derived key is derived from the tenant secret on demand. The key material is passed to the search engine's cache on a secure channel.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

When a user creates or edits records:

- The core application determines if the search index segment should be encrypted or not based on metadata.
- If the search index segment should be encrypted, the encryption service checks for the matching search encryption key ID in the cached memory.
- The encryption service determines if the key exists in the cache.
  - If the key exists in the cache, the encryption service uses the key for encryption.
  - Otherwise, the service sends a request to the core application, which in turn sends an authenticated derivation request to the regional KMS and returns the key to the core application server.
- After retrieving the key, the encryption service generates a random initialization vector (IV) and encrypts the data by using NSS or JCE's AES-256 implementation.
- The key ID (identifier of the key being used to encrypt the index segment) and IV are saved in the search index.

If Salesforce admins disable encryption on a field, all index segments that were encrypted are unencrypted and the key ID is set to null. This process can take up to 7 days.

How Does Shield Platform Encryption Work in a Sandbox?

Refreshing a sandbox from a production org creates an exact copy of the production org. If Shield Platform Encryption is enabled on the production org, all encryption settings are copied, including tenant secrets created in production.

Once a sandbox is refreshed, tenant secret changes are confined to your current org. This means that when you rotate or destroy a tenant secret on sandbox, it doesn't affect the production org.

As a best practice, rotate tenant secrets on sandboxes after a refresh. Rotation ensures that production and sandbox use different tenant secrets. Destroying tenant secrets on a sandbox renders encrypted data unusable in cases of partial or full copies.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

Why Bring Your Own Key?

Shield Platform Encryption's Bring Your Own Key (BYOK) feature gives you an extra layer of protection if there's unauthorized access to critical data. It can also help you meet the regulatory requirements that come with handling financial, health, or personal data. After you set up your key material, use Shield Platform Encryption as you normally would to encrypt data at rest in your Salesforce org.

Important: Where possible, we changed noninclusive terms to align with our company value of Equality. We maintained certain terms to avoid any effect on customer implementations.

Shield Platform Encryption enables Salesforce administrators to manage the lifecycle of their data encryption keys while protecting these keys from unauthorized access. By controlling the lifecycle of your organization's tenant secrets, you control the lifecycle of the data encryption keys derived from them. Alternatively, you can opt out of key derivation altogether and upload a final data encryption key.

Data encryption keys aren't stored in Salesforce. Instead, they're derived from the primary secret (KDF seed, formerly master secret) and tenant secret on demand whenever a key is needed to encrypt or decrypt customer data. The primary secret is generated one time per release for everyone during a High Assurance Virtual Ceremony (HAVC) using a hardware security module (HSM). The tenant secret is unique to your org, and you control when it's generated, activated, revoked, or destroyed.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

You have four options for setting up your key material.

- Use Shield Platform Encryption to generate your org-specific tenant secrets.
- Use the infrastructure of your choice, such as an on-premises HSM, to generate and manage your tenant secret outside of Salesforce. Then upload that tenant secret to the regional Salesforce KMS. This option is known as Bring Your Own Key, although the element you're really bringing is the tenant secret from which the key is derived.
- Opt out of the Shield Platform Encryption key derivation process with the Bring Your Own Key service. Use the infrastructure of your choice to create a data encryption key instead of a tenant secret. Then upload this data encryption key to the regional Shield KMS. When you opt out of derivation on a key-by-key basis, the Shield Platform Encryption bypasses the derivation process and uses this key material as your final data encryption key. You can rotate customer-supplied data encryption keys just like you can rotate a customer-supplied tenant secret.

- Generate and store your key material outside of Salesforce by using a key service of your choice, and use the Salesforce Cache-Only Key Service to fetch your key material on demand. Your key service transmits your key material over a secure channel that you configure. It's then encrypted and stored in the cache for immediate encryption and decryption operations.

Why Isn't My Encrypted Data Masked?

If the Shield Platform Encryption service isn't available, data is masked in some types of encrypted fields. This is to help you troubleshoot encryption key issues, not to control user access to data. If you have data that you don't want some users to see, revisit those users' field-level security settings, record access settings, and object permissions.

Encryption prevents outsiders from using your Salesforce data even if they manage to get it. It is not a way to hide data from authenticated users. User permissions are the only way to control data visibility for authenticated users. Encryption at rest is about logins, not permissions.

With Shield Platform Encryption, if a user is authorized to see a given set of data, that user sees that data whether it's encrypted or not.

- Authentication means that making sure only legitimate users can get into your system. For example, a company's Salesforce org is only for use by active employees of that company. Anyone who is not an employee is not authenticated; that is, they are barred from logging in. If they do somehow get their hands on the data, it's useless to them because it is encrypted.
- Authorization defines which data or features an authenticated user can use. For example, a sales associate can see and use data in the Leads object, but can't see the regional forecasts, which are intended for sales managers. Both the associate and the manager are properly logged in (authenticated), but their permissions (authorization) are different. That the data is encrypted doesn't make any difference to them.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

In general, data can be masked but not encrypted, or encrypted but not masked. For example, regulators often require that only the last four digits of a credit card number be visible to users. Applications typically mask the rest of the number, meaning they replace the digits with asterisks on the user's screen. Without encryption, you can still read the digits that are masked if you can get to the database where they are stored.

Masking might not be enough for your credit card numbers. You may or may not want to encrypt them in the database as well. (You probably should.) If you do, authenticated users will still see the same masked values.

In this way, masking and encryption are different solutions for different problems. You mask data to hide it from users who are authenticated but not authorized to see that data. You encrypt data to prevent someone from stealing the data. (Or, more precisely, to make the data useless if someone does steal it.)

The following table shows the fields that use masking. All others don't.

Field Type	Mask	What It Means
Email, Phone, Text, Text Area, Text Area (Long), URL	?????	This field is encrypted, and the encryption key has been destroyed.
	!!!!!	This service is unavailable right now. For help accessing this service, contact Salesforce.
Custom Date	08/08/1888	This field is encrypted, and the encryption key has been destroyed.
	01/01/1777	This service is unavailable right now. For help accessing this service, contact Salesforce.

Field Type	Mask	What It Means
Custom Date/Time	08/08/1888 12:00 PM	This field is encrypted, and the encryption key has been destroyed.
	01/01/1777 12:00 PM	This service is unavailable right now. For help accessing this service, contact Salesforce.

You can't enter these masking characters into an encrypted field. For example, if a Date field is encrypted and you enter 07/07/1777, you must enter a different value before it can be saved.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Shield Platform Encryption in Hyperforce

Shield Platform Encryption operates in parallel with volume-level encryption. By default, Hyperforce provides volume-level encryption for data at rest. Volume-level encryption protects all the data on a disk with one encryption key, which Salesforce owns and manages. With Shield Platform Encryption, you can encrypt your data in Hyperforce with unique keys that you control and manage.

Shield Platform Encryption features work in Hyperforce just like they do in implementations running on Salesforce's first-party infrastructure. You can generate a unique key with Salesforce, or bring your own customer-supplied key, and rotate, export, and delete key material on demand. You can also encrypt files and attachments and data in CRM Analytics, Chatter, search indexes, and the event bus. And you can gather statistics about how much of your data is encrypted and, of that data, how much of it's encrypted by active key material. This extra layer of security and control can help you meet your auditing, regulatory, contractual, and compliance requirements.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

How Do I Deploy Shield Platform Encryption?

When you deploy Shield Platform Encryption to your org with a tool such as Salesforce Extensions for Visual Studio Code, Migration Tool, or Postman, the Encrypted field attribute persists. However, if you deploy to orgs with different encryption settings, the effect depends on whether Shield Platform Encryption is enabled in the target org.

Regardless of how you deploy, Salesforce automatically checks to see if the implementation violates Shield Platform Encryption guidelines.

Source Organization	Target Organization	Result
Shield Platform Encryption enabled	Shield Platform Encryption enabled	The source Encrypted field attribute indicates enablement.
Shield Platform Encryption enabled	Shield Platform Encryption not enabled	The Encrypted field attribute is ignored.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

Source Organization	Target Organization	Result
Shield Platform Encryption not enabled	Shield Platform Encryption enabled	The target Encrypted field attribute indicates enablement.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Set Up Your Encryption Policy

An encryption policy is your plan for encrypting data with Shield Platform Encryption. You can choose how you want to implement it. For example, you can encrypt individual fields and apply different encryption schemes to those fields. Or you can choose to encrypt other data elements such as files and attachments, data in Chatter, or search indexes. Remember that encryption is not the same thing as field-level security or object-level security. Put those controls in place before you implement your encryption policy.

To provide Shield Platform Encryption for your org, contact your Salesforce account executive. They'll help you provision the correct license so you can create key material and start encrypting data.

Warning: Salesforce recommends testing Shield Platform Encryption in a sandbox org to confirm that your reports, dashboards, processes, and other operations work correctly.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

IN THIS SECTION:

1. Which User Permissions Does Shield Platform Encryption Require?
   Assign permissions to your users according to their roles regarding encryption and key management. Some users need permission to select data for encryption, while other users require combinations of permissions to work with certificates or key material. Enable these permissions for user profiles just like you do for any other user permission.
2. Generate a Tenant Secret with Salesforce
   Salesforce makes it easy to generate a unique tenant secret from the Setup menu.
3. Manage Tenant Secrets by Type
   With tenant secret types, you can specify which kind of data that you want to encrypt with a Shield Platform Encryption tenant secret. Apply different key rotation cycles or key destruction policies to tenant secrets that encrypt different kinds of data. Apply a tenant secret to search index files and other data stored in Salesforce.
4. Encrypt New Data in Standard Fields
   You can encrypt standard fields on standard objects at rest with Shield Platform Encryption. For the best results, encrypt the least number of fields possible.
5. Encrypt Fields on Custom Objects and Custom Fields
   You can encrypt standard fields on custom objects, and custom fields on both standard and custom objects. Shield Platform Encryption also supports custom fields in installed managed packages. Apply encryption to custom fields from the management settings for each object. For best results, encrypt the least number of fields possible. When you add encryption to a field, all new data in that field is encrypted.
6. Encrypt New Files and Attachments
   For another layer of data protection, encrypt files and attachments. If Shield Platform Encryption is on, the body of each file or attachment is encrypted when it's uploaded.

7. Encrypt Data in Chatter
   Enabling Shield Platform Encryption for Chatter adds an extra layer of security to the information that users share in Chatter. You can encrypt data at rest in feed posts and comments, questions and answers, link names and URLs, poll questions and choices, and content from your custom rich publisher apps.
8. Encrypt Search Index Files
   Sometimes you must search for personally identifiable information (PII) or data that's encrypted in the database. When you search your org, the results are stored in search index files. You can encrypt these search index files with Shield Platform Encryption, adding another layer of security to your data.
9. Encrypt CRM Analytics Data
   To get started with CRM Analytics Encryption, generate a tenant secret with Shield Platform Encryption. After you generate a CRM Analytics tenant secret, CRM Analytics Encryption uses the Shield Platform Encryption key management architecture to encrypt your CRM Analytics data.
10. Encrypt Event Bus Data
    To enable encryption of change data capture or platform event messages at rest, generate an event bus tenant secret and then enable encryption.
11. Fix Compatibility Problems
    When you select fields or files to encrypt with Shield Platform Encryption, Salesforce automatically checks for potential side effects. The validation service then warns you if any existing settings may pose a risk to data access or your normal use of Salesforce. You have some options for how to clear up these problems.
12. Disable Encryption on Fields
    You can disable Shield Platform Encryption for fields, files, or both. You can turn field encryption on or off individually, but file encryption is all or nothing.

Which User Permissions Does Shield Platform Encryption Require?

Assign permissions to your users according to their roles regarding encryption and key management. Some users need permission to select data for encryption, while other users require combinations of permissions to work with certificates or key material. Enable these permissions for user profiles just like you do for any other user permission.

	Manage Encryption Keys	Customize Application	View Setup and Configuration	Manage Certificates
View Platform Encryption Setup pages		✓	✓	
Generate, destroy, export, import, and upload tenant secrets and customer-supplied key material	✓			
Query the TenantSecret object via the API	✓			
Edit, upload, and download HSM-protected certificates with the Shield Platform Encryption Bring Your Own Key service	✓	✓		✓

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

	Manage Encryption Keys	Customize Application	View Setup and Configuration	Manage Certificates
Enable features on the Encryption Settings page	✔	✔		

The Customize Application and Manage Certificates permissions are automatically enabled for users with the System Administrator profile.

Restrict Access to Encryption Policy Settings

You can require admins to also have the Manage Encryption Keys permission to complete encryption policy tasks. These tasks include changing the encryption scheme on fields, enabling and disabling encryption on fields, files, and attachments, and other data elements.

To opt in to this feature, you need the Manage Encryption Keys permission. Then opt in from the Encryption Settings page.

1. From Setup, in the Quick Find box, enter `Encryption Settings`, and then select **Encryption Settings**.
2. In the Advanced Encryption Settings section, turn on **Restrict Access to Encryption Policy Settings**.

   You can also enable Restrict Access to Encryption Policy Settings programmatically. For more information, see PlatformEncryptionSettings in the *Metadata API Developer Guide*.

This restriction applies to actions taken through the API or from Setup pages, such as the Encryption Policy page or the Object Manager.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Generate a Tenant Secret with Salesforce

Salesforce makes it easy to generate a unique tenant secret from the Setup menu.

Only authorized users can generate tenant secrets from the Platform Encryption page. Ask your Salesforce admin to assign you the Manage Encryption Keys permission.

1. From Setup, in the Quick Find box, enter `Platform Encryption`, and then select **Key Management**.
2. In the Key Management Table, select a key type.
3. Click **Generate Tenant Secret**.

   How often you can generate a tenant secret depends on the tenant secret type. You can generate tenant secrets for the Fields and Files (Probabilistic) type once every 24 hours in production orgs, and once every 4 hours in Sandbox orgs. You can generate tenant secrets for the Search Index type once every 7 days.

   Note: You can have up to 50 active and archived tenant secrets of each type. For example, you can have one active and 49 archived Fields and Files (Probabilistic) tenant secrets, and the same number of Analytics tenant secrets. This limit includes Salesforce-generated and customer-supplied key material.

   If you run into this limit, destroy an existing key before reactivating, rearchiving, or creating a callout to another one. Before destroying a key, synchronize the data it encrypts with an active key.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To manage tenant secrets:
- Manage Encryption Keys

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Manage Tenant Secrets by Type

With tenant secret types, you can specify which kind of data that you want to encrypt with a Shield Platform Encryption tenant secret. Apply different key rotation cycles or key destruction policies to tenant secrets that encrypt different kinds of data. Apply a tenant secret to search index files and other data stored in Salesforce.

Tenant secrets are categorized according to the kind of data they encrypt.

Note: You can have up to 50 active and archived tenant secrets of each type. For example, you can have one active and 49 archived Fields and Files (Probabilistic) tenant secrets and the same number of Analytics tenant secrets. This limit includes Salesforce-generated and customer-supplied key material.

If you run into this limit, destroy an existing key before reactivating, rearchiving, or creating a callout to another one. Before destroying a key, synchronize the data it encrypts with an active key.

Fields and Files (Probabilistic)
Encrypts data using the probabilistic encryption scheme, including data in fields, attachments, and files other than search index files

Field (Deterministic)
Encrypts field data using the deterministic encryption scheme

Search Index
Encrypts search index files

Analytics
Encrypts CRM Analytics data

Event Bus
Encrypts event messages that are stored temporarily in the event bus. For change data capture events, this secret encrypts data changes and the corresponding event that contains them. For platform events, this secret encrypts the event message including event field data.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To manage tenant secrets:
- Manage Certificates
  AND
  Manage Encryption Keys

1. From Setup, in the Quick Find box, enter `Platform Encryption`, and then select **Key Management**.
2. In the Key Management Table, select a key type.

   The Key Management Table displays all tenant secrets of each data type. If you generate or upload a tenant secret while viewing tenant secrets of a particular type, it becomes the active tenant secret for that data.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Encrypt New Data in Standard Fields

You can encrypt standard fields on standard objects at rest with Shield Platform Encryption. For the best results, encrypt the least number of fields possible.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Depending on the size of your org, enabling a standard field for encryption can take a few minutes.

1. Make sure that your org has an active encryption key. If you're not sure, check with your administrator.
2. From Setup, in the Quick Find box, enter `Encryption Settings`, and then select **Encryption Settings**.
3. In the Advanced Encryption Settings section, click **Select Fields**.
4. Click **Edit**.
5. Select the fields that you want to encrypt.
   All new data entered in this field is encrypted. By default, data is encrypted using a probabilistic encryption scheme. To apply deterministic encryption to your data, select **Deterministic** from the Encryption Scheme list. For more information, see "How Deterministic Encryption Supports Filtering" in Salesforce Help.
6. Save your work.

The automatic Platform Encryption validation service checks for settings in your org that can block encryption. You receive an email with suggestions for fixing incompatible settings.

Field values are automatically encrypted only in records created or updated after you've enabled encryption. Synchronize existing data with your active key material on the Encryption Statistics and Data Sync page.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To view setup:
- View Setup and Configuration

To encrypt fields:
- Customize Application

Note: To encrypt standard fields on custom objects, such as Custom Object Name, see Encrypt Fields on Custom Objects and Custom Fields.

Encrypt Fields on Custom Objects and Custom Fields

You can encrypt standard fields on custom objects, and custom fields on both standard and custom objects. Shield Platform Encryption also supports custom fields in installed managed packages. Apply encryption to custom fields from the management settings for each object. For best results, encrypt the least number of fields possible. When you add encryption to a field, all new data in that field is encrypted.

IN THIS SECTION:

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To view setup:
- View Setup and Configuration

To encrypt fields:
- Customize Application

Encrypt New Data in Custom Fields in Salesforce Classic

Apply Shield Platform Encryption to new custom fields in Salesforce Classic, or add encryption to new data entered in an existing custom field.

To apply deterministic encryption to custom fields, first turn on deterministic encryption from the Encryption Settings page in Setup.

1. From the management settings for the object, go to **Fields**.
2. In the Custom Fields & Relationships section, create a field or edit an existing one.
3. Select **Encrypted**.
   All new data entered in this field is encrypted. By default, data is encrypted using a probabilistic encryption scheme. To apply deterministic encryption to your data, select a deterministic option listed under Encrypted.
4. Save your work.

The automatic Shield Platform Encryption validation service checks for settings in your org that can block encryption. You receive an email with suggestions for fixing incompatible settings.

Field values are automatically encrypted only in records created or updated after you've enabled encryption. Synchronize your existing data with your active key material from the Encryption Statistics and Data Sync page.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To view setup:
- View Setup and Configuration

To encrypt fields:
- Customize Application

Encrypt New Data in Custom Fields in Lightning Experience

Apply Shield Platform Encryption to new custom fields in Lightning Experience, or add encryption to new data entered in an existing custom field.

To apply deterministic encryption to custom fields, first turn on deterministic encryption from the Encryption Settings page in Setup.

1. From Setup, select **Object Manager**, and then select your object.
2. Click **Fields & Relationships**.
3. When you create or edit a custom field, select **Encrypted**.
   All new data entered in this field is encrypted. By default, data is encrypted using a probabilistic encryption scheme. To apply deterministic encryption to your data, select a deterministic option listed under Encrypted.
4. Save your work.

The automatic Platform Encryption validation service checks for settings in your org that can block encryption. You receive an email with suggestions for fixing incompatible settings.

Field values are automatically encrypted only in records created or updated after you've enabled encryption. Synchronize existing data with your active key material from the Encryption Statistics and Data Sync page.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To view setup:
- View Setup and Configuration

To encrypt fields:
- Customize Application

Encrypt Custom Fields in Installed Managed Packages

If an installed managed package supports Shield Platform Encryption, you can encrypt custom fields in that package. Turn on encryption for custom fields in installed managed packages from the Encryption Settings page, and then apply encryption to custom fields in your installed managed package.

1. From Setup, in the Quick Find box, enter `Encryption Settings`, and then select **Encryption Settings**.
2. In the Advanced Encryption Settings section, turn on **Encrypt Custom Fields in Managed Packages**.

   You can also enable encryption for managed packages programmatically. For more information, see PlatformEncryptionSettings in the *Metadata API Developer Guide*.

   From now on, if an installed managed package supports encryption, you can encrypt custom fields in that package. Don't know if your application supports encrypted fields? Look for the Designed to Work With Salesforce Shield marker in your application's AppExchange listing.

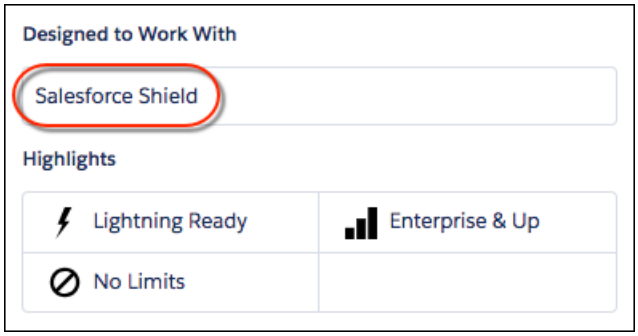
EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To enable features on the Encryption Settings page:
- Customize Application



If you don't see this marker, talk to your app vendor.

Note: If Salesforce enabled this feature for you before Spring '19, opt in again on the Encryption Settings page. If you don't opt in, you can't enable or disable encryption on those fields. However, your encrypted custom fields in installed managed packages remain encrypted.

Encrypt New Files and Attachments

For another layer of data protection, encrypt files and attachments. If Shield Platform Encryption is on, the body of each file or attachment is encrypted when it's uploaded.

Note: Before you begin, make sure that your org has an active encryption key. If you're not sure, check with your Salesforce admin.

1. From Setup, in the Quick Find box, enter `Encryption Settings`, and then select **Encryption Settings**.
2. In the Encryption Policy section, turn on **Encrypt Files and Attachments**.

Important: Users with access to the file can work normally with it regardless of their encryption-specific permissions. Users who are logged in to your org and have read access can search and view the body content.

Users can continue to upload files and attachments per the usual file size limits. Expansion of file sizes caused by encryption doesn't count against these limits.

Turning on file and attachment encryption affects new files and attachments. It doesn't automatically encrypt files and attachments that are already in Salesforce. Apply your active key material to existing data with on the Encryption Statistics and Data Sync page.

To check whether a file or attachment is encrypted, look for the encryption indicator on the detail page of the file or attachment. You can also query the `isEncrypted` field on the ContentVersion object (for files) or on the Attachment object (for attachments).

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

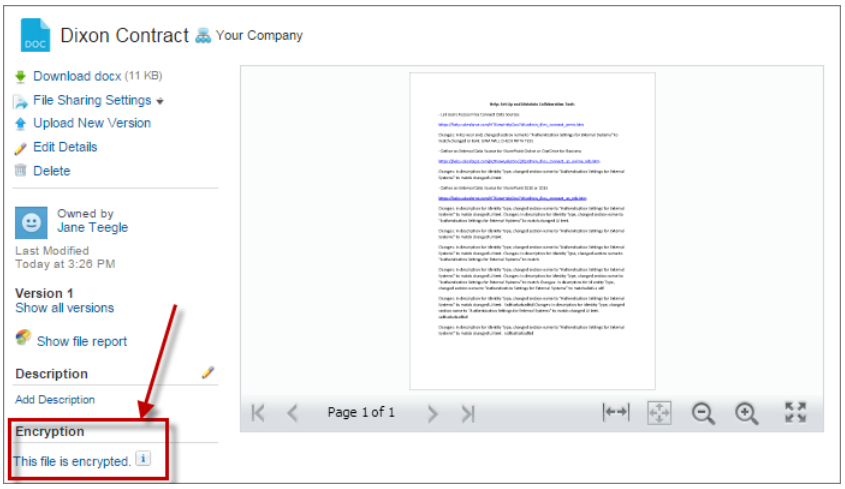
Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To view setup:
- View Setup and Configuration

To encrypt files:
- Customize Application

Here's What It Looks Like When a File Is Encrypted



Note: The encryption indicator is only available in Salesforce Classic.

Encrypt Data in Chatter

Enabling Shield Platform Encryption for Chatter adds an extra layer of security to the information that users share in Chatter. You can encrypt data at rest in feed posts and comments, questions and answers, link names and URLs, poll questions and choices, and content from your custom rich publisher apps.

We recommend that you test Encryption for Chatter in a dedicated Sandbox environment before enabling it in production.

Unlike encryption for custom and standard fields, enabling encryption for Chatter encrypts all eligible Chatter fields.

1. Make sure that your org has an active encryption key. If you're not sure, check with your administrator.
2. From Setup, in the Quick Find box, enter `Encryption Settings`, and then select **Encryption Settings**.
3. In the Advanced Encryption Settings section, turn on **Encrypt Chatter**.

The automatic Shield Platform Encryption validation service checks for settings that could block encryption. If the service finds potential problems, it sends you an email with suggestions for fixing the problems.

After you activate encryption for Chatter, new data that you enter into Chatter gets encrypted. To encrypt historic Chatter data, contact Salesforce Customer Support to request the background encryption service.

When you edit or update an encrypted Chatter field, the field's revision history is also encrypted. For example, if you update a post, the old version of the post remains encrypted.

If you enabled Encryption for Chatter in Spring '17 and you want to access the most up-to-date features, deselect **Encrypt Chatter** and then reselect **Encrypt Chatter**.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To view setup:
- View Setup and Configuration

To encrypt fields:
- Customize Application

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Encrypt Search Index Files

Sometimes you must search for personally identifiable information (PII) or data that's encrypted in the database. When you search your org, the results are stored in search index files. You can encrypt these search index files with Shield Platform Encryption, adding another layer of security to your data.

1. From Setup, in the Quick Find box, enter `Platform Encryption`, and then select **Key Management**.
2. In the Key Management Table, select **Search Index**.
3. Select **Generate Tenant Secret**.
   This new tenant secret encrypts only the data stored in search index files.
4. From Setup, in the Quick Find box, enter `Encryption Settings`, and then select **Encryption Settings**.
5. In the Encryption Policy section, turn on **Encrypt Search Indexes**.
   Your search indexes are now encrypted with the active Search Index tenant secret.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To view setup:
- View Setup and Configuration

To enable encryption key (tenant secret) management:
- Manage Profiles and Permission Sets

Encrypt CRM Analytics Data

To get started with CRM Analytics Encryption, generate a tenant secret with Shield Platform Encryption. After you generate a CRM Analytics tenant secret, CRM Analytics Encryption uses the Shield Platform Encryption key management architecture to encrypt your CRM Analytics data.

You must be approved by the CRM Analytics Encryption Product Manager to use CRM Analytics Encryption. To request access, file a case with Salesforce Customer Support.

To learn about CRM Analytic's key management architecture, read Strengthen Your Data's Security with Shield Platform Encryption.

1. From Setup, in the Quick Find box, enter `Platform Encryption`, and then select **Key Management**.
2. In the Key Management Table, select **Analytics**.
3. Generate a tenant secret or upload key material.
4. From Setup, in the Quick Find box, enter `Encryption Settings`, and then select **Encryption Settings**.
5. In the Encryption Policy section, select **Encrypt CRM Analytics**.
   New datasets in CRM Analytics are now encrypted.

   Note: Data that was in CRM Analytics before encryption was enabled isn't encrypted. If preexisting data is imported from Salesforce objects through the dataflow, the data becomes encrypted on the next dataflow run. Other preexisting data, such as CSV data, must be reimported to become encrypted. Although preexisting data isn't encrypted, it's still accessible and fully functional in its unencrypted state when encryption is enabled.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing CRM Analytics Platform and either Salesforce Shield or the Platform Encryption add-on.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To view setup:
- View Setup and Configuration

To manage key material:
- Manage Encryption Keys

Encrypt Event Bus Data

To enable encryption of change data capture or platform event messages at rest, generate an event bus tenant secret and then enable encryption.

These steps enable encryption for change data capture and platform events.

1. From Setup, in the Quick Find box, enter `Platform Encryption`, and then select **Key Management**.
2. In the Key Management Table, select **Event Bus**.
3. Click **Generate Tenant Secret**, or to upload a customer-supplied tenant secret, click **Bring Your Own Key**, and upload your key.
4. From Setup, in the Quick Find box, enter `Encryption Settings`, and then select **Encryption Settings**.
5. In the Encryption Policy section, turn on **Encrypt Change Data Capture Events and Platform Events**.

Warning: If you don't enable Shield Platform Encryption for change data capture events and platform events, events are stored in clear text in the event bus.

EDITIONS

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer**Editions. Requires purchasing either Salesforce Shield or the Platform Encryption add-on.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To view setup:
- View Setup and Configuration

To manage key material:
- Manage Encryption Keys

Fix Compatibility Problems

When you select fields or files to encrypt with Shield Platform Encryption, Salesforce automatically checks for potential side effects. The validation service then warns you if any existing settings may pose a risk to data access or your normal use of Salesforce. You have some options for how to clear up these problems.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

If your results include error messages, you're probably running into one or more of these limitations:

Portals

You can't encrypt standard fields, because a legacy customer or partner portal (created before 2013) is enabled in your organization. To deactivate a legacy customer portal, go to the Customer Portal Settings page in Setup. To deactivate a legacy partner portal, go to the Partners page in Setup.

Note: Experience Cloud sites aren't related to this issue. They're fully compatible with encryption.

Criteria-Based Sharing Rules

You've selected a field that is used in a filter in a criteria-based sharing rule.

SOQL/SOSL queries

You've selected a field that's used in an aggregate function in a SOQL query, or in a WHERE, GROUP BY, or ORDER BY clause.

Formula fields

You've selected a field that's referenced by a custom formula field in an unsupported way. Formulas can use BLANKVALUE, CASE, HYPERLINK, IF, IMAGE, ISBLANK, ISNULL, NULLVALUE, and concatenation (&). Custom formula fields can reference encrypted data in Salesforce Classic but not Lightning Experience or via SOQL.

Flows and Processes

You've selected a field that's used in one of these contexts.

- To filter data in a flow
- To sort data in a flow
- To filter data in a process
- To filter data in a record choice set
- To sort data in a record choice set

Note: By default, your results only list the first 250 errors per element. You can increase the number of errors listed in your results to 5000. Contact Salesforce for help.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Disable Encryption on Fields

You can disable Shield Platform Encryption for fields, files, or both. You can turn field encryption on or off individually, but file encryption is all or nothing.

When you turn off Shield Platform Encryption for a field, most encrypted data is automatically mass-decrypted. The decryption starts automatically after you disable encryption for specific fields and save your changes. When data is decrypted, any functionality that was limited or unavailable when the data was encrypted is also restored. Salesforce notifies you by email when the decryption process is complete.

Note: Automatic decryption takes longer when you disable encryption on fields encrypted with a key that's been destroyed. Salesforce notifies you by email when the process finishes.

Long text area and rich text area field types can't be automatically decrypted. If you decrypt data encrypted with a destroyed key, that data can't be mass-decrypted.

Note: If you disable Shield Platform Encryption and can't access data in fields that were previously encrypted, contact Salesforce for help.

1. From Setup, in the Quick Find box, enter `Encryption Settings`, and then select **Encryption Settings**.
2. In the Advanced Encryption Settings section, click **Select Fields**.
3. Click **Edit**.
4. Deselect the fields that you want to stop encrypting and save your work.
   Users can see data in these fields.
5. To disable encryption for files and attachments, Chatter, or other data categories, turn off those features from the Encryption Settings page and save your work.

After your data is decrypted, functionality that Shield Platform Encryption limited or changed is restored.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To view setup:
- View Setup and Configuration

To disable encryption:
- Customize Application

Filter Encrypted Data with Deterministic Encryption

You can filter data that's protected with Shield Platform Encryption using deterministic encryption. Your users can filter records in reports and list views, even when the underlying fields are encrypted. You can apply case-sensitive deterministic encryption or exact-match case-insensitive deterministic encryption to data on a field-by-field basis.

Deterministic encryption supports WHERE clauses in SOQL queries and is compatible with unique and external ID fields. It also supports single-column indexes and single and double-column unique indexes. Deterministic encryption key types use the Advanced Encryption Standard (AES) with 256-bit keys with CBC mode and a static initialization vector (IV).

IN THIS SECTION:

By default, Shield Platform Encryption uses a probabilistic encryption scheme to encrypt data. Each bit of data is turned into a fully random ciphertext string every time it's encrypted. Encryption doesn't generally impact users who are authorized to view the data. The exceptions are when logic is executed in the database or when encrypted values are compared to a string or to each other. In these cases, because the data has been turned into random, patternless strings, filtering isn't possible. For example, you might run a SOQL query in custom Apex code against the Contact object, where LastName = 'Smith'. If the LastName field is encrypted with probabilistic encryption, you can't run the query. Deterministic encryption addresses this problem.

Encrypt Data with the Deterministic Encryption Scheme

Generate key material specific to data encrypted with deterministic encryption schemes. You can apply either case-sensitive deterministic encryption or case-insensitive deterministic encryption schemes to your data, depending on the kind of filtering you want to perform. When you apply a deterministic encryption scheme to a field or change between deterministic encryption schemes, synchronize your data. Syncing data makes sure that your filters and queries produce accurate results.

How Deterministic Encryption Supports Filtering

By default, Shield Platform Encryption uses a probabilistic encryption scheme to encrypt data. Each bit of data is turned into a fully random ciphertext string every time it's encrypted. Encryption doesn't generally impact users who are authorized to view the data. The exceptions are when logic is executed in the database or when encrypted values are compared to a string or to each other. In these cases, because the data has been turned into random, patternless strings, filtering isn't possible. For example, you might run a SOQL query in custom Apex code against the Contact object, where LastName = 'Smith'. If the LastName field is encrypted with probabilistic encryption, you can't run the query. Deterministic encryption addresses this problem.

To be able to use filters when data is encrypted, we have to allow some patterns in our data. Deterministic encryption uses a static initialization vector (IV) so that encrypted data can be matched to a particular field value. The system can't read a piece of data that's encrypted, but it does know how to retrieve the ciphertext that stands for that piece of data thanks to the static IV. The IV is unique for a given field in a given org and can only be decrypted with your org-specific encryption key.

We evaluate the relative strengths and weaknesses of cryptographic approaches based on the types of attacks that can be launched against a particular algorithm. We also consider the length of time that it could take for the attack to succeed. For example, it is commonly said that a brute-force attack against an AES 256-bit key would take a billion billion years given current computing capabilities. Nevertheless, it is common practice to rotate keys regularly.

Certain kinds of attacks become a bit less far-fetched when you get away from purely random ciphertext. For example, an attacker could conceivably analyze deterministically encrypted ciphertext and determine that the cleartext string `Alice` always resolves to the ciphertext `YjNkY2JlNjU5M2JkNjk4MGJiNWE2NGQ5NzI5MzU1OTcNCg==`. Given enough time to eavesdrop, an attacker could defeat encryption by building a dictionary of cleartext values to ciphertext values.

The Salesforce Shield approach is to expose just enough determinism to let bona fide users filter on encrypted data while limiting it enough to ensure that a given plaintext value doesn't universally result in the same ciphertext value across all fields, objects, or orgs. Even if an attacker successfully matched cleartext to encrypted values for one field, the attacker would have to do it all over again for another field, and again for the same field in another object.

In this way, deterministic encryption decreases encryption strength only as minimally necessary to allow filtering.

Deterministic encryption comes in two types: case-sensitive and case-insensitive. With case-sensitive encryption, a SOQL query against the Contact object, where LastName = Jones, returns only Jones, not jones or JONES. Similarly, when the case-sensitive deterministic scheme tests for unicity (uniqueness), each version of "Jones" is unique.

For case-insensitive, a SOQL query against the Lead object, where Company = Acme, returns Acme, acme, or ACME. When the case-insensitive scheme tests for unicity (uniqueness), each version of Acme is considered identical.

Important: Probabilistic encryption is not supported on the email address field for the Contact object. To avoid creating duplicate accounts during self-registration, use deterministic encryption.

Encrypt Data with the Deterministic Encryption Scheme

Generate key material specific to data encrypted with deterministic encryption schemes. You can apply either case-sensitive deterministic encryption or case-insensitive deterministic encryption schemes to your data, depending on the kind of filtering you want to perform. When you apply a deterministic encryption scheme to a field or change between deterministic encryption schemes, synchronize your data. Syncing data makes sure that your filters and queries produce accurate results.

USER PERMISSIONS

To generate, destroy, export, import, and upload tenant secrets and customer-supplied key material:

- Manage Encryption Keys

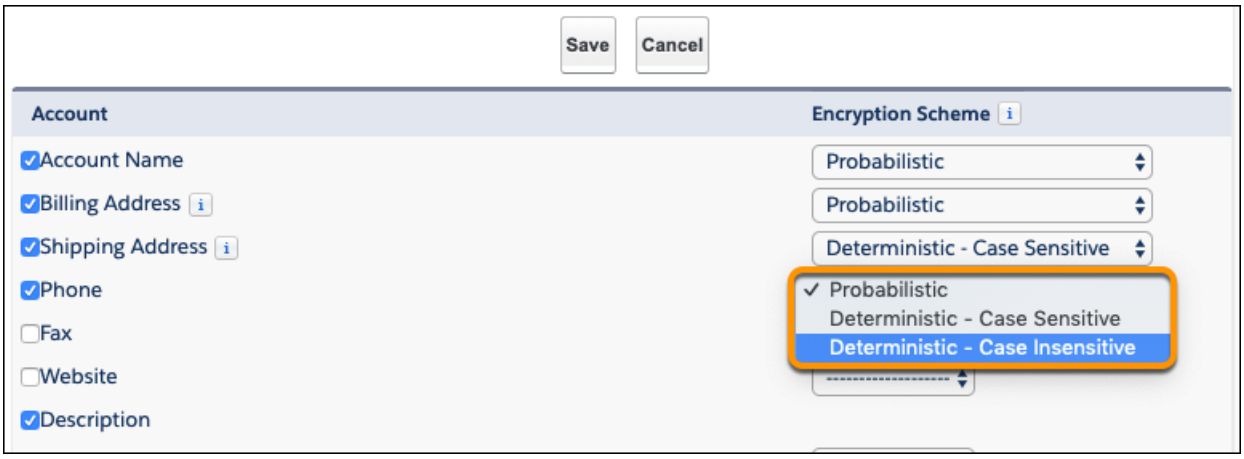
To enable Deterministic Encryption:

- Customize Application

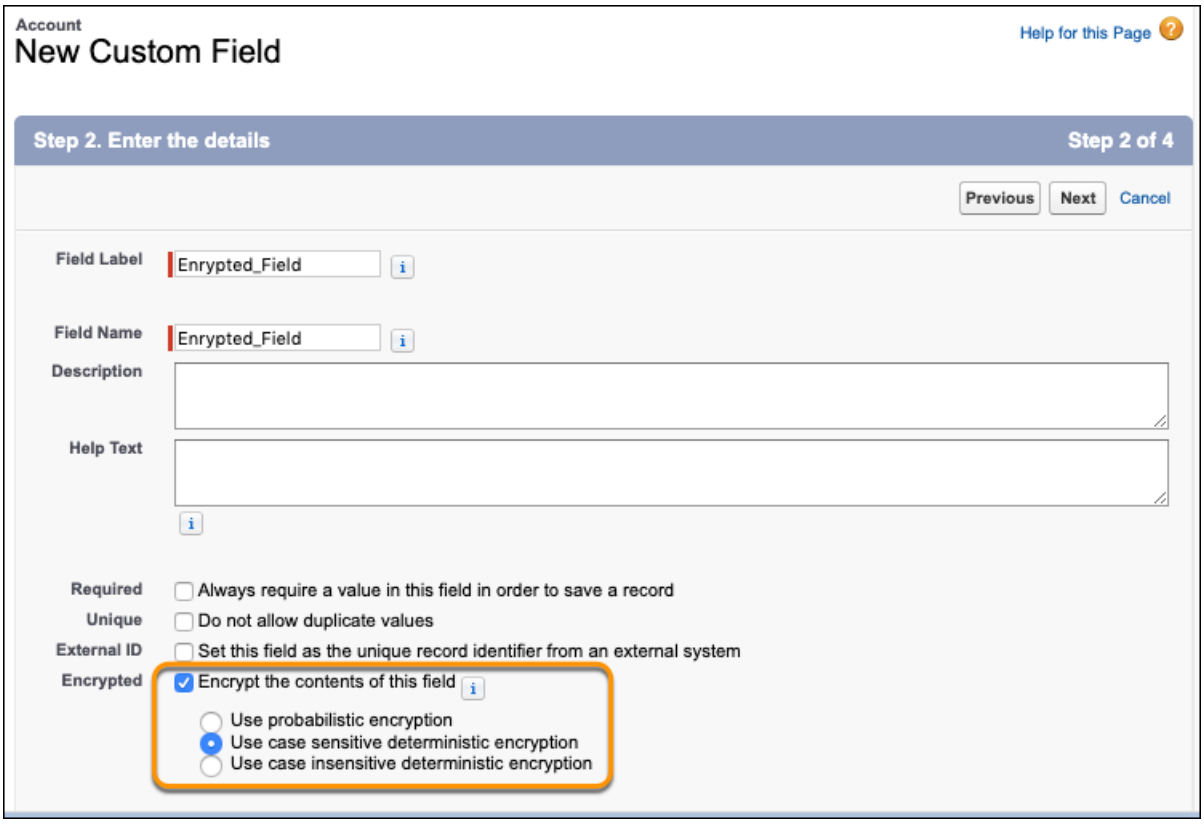
1. From Setup, in the Quick Find box, enter `Platform Encryption`, and then select **Key Management**.
2. In the Key Management Table, select **Fields and Files (Probabilistic)**.
3. Generate or upload a tenant secret.
4. From Setup, in the Quick Find box, enter `Encryption Settings`, and then select **Encryption Settings**.
5. In the Advanced Encryption Settings section, turn on **Deterministic Encryption**.

   You can also enable deterministic encryption programmatically. For more information, see PlatformEncryptionSettings in the *Metadata API Developer Guide*.
6. From Setup, select **Key Management**.
7. In the Key Management Table, select **Fields (Deterministic)**.
8. Generate a tenant secret.

   You can mix and match probabilistic and deterministic encryption, encrypting some fields one way and some fields the other.
9. Enable encryption for each field, and choose a deterministic encryption scheme. How you do that depends on whether it's a standard field or a custom field.
   - For standard fields, from Setup, select **Encryption Policy**, and then select **Encrypt Fields**. For each field that you want to encrypt, select the field name, and then choose either **Deterministic—Case Sensitive** or **Deterministic—Case Insensitive** from the Encryption Scheme list.



   - For custom fields, open the Object Manager and edit the field that you want to encrypt. Select **Encrypt the contents of this field**, and select an encryption scheme.



You receive an email notifying you when the enablement process finishes.

Note: Expect the enablement process to take longer when you apply deterministic encryption to a field with a large number of records. To support filtering, the enablement process also rebuilds field indexes.

10. When you apply or remove deterministic encryption to a field, it's possible that existing data in that field doesn't appear in queries or filters. To apply full deterministic functionality to existing data, synchronize all your data with your active key material from the Encryption Statistics and Data Sync page. For more information, see Synchronize Your Data Encryption with the Background Encryption Service.

Key Management and Rotation

Shield Platform Encryption lets you control and rotate the key material used to encrypt your data. You can use Salesforce to generate a tenant secret for you, which is then combined with a per-release primary secret to derive a data encryption key. This derived data encryption key is then used in encryption and decryption functions. You can also use the Bring Your Own Key (BYOK) service to upload your own key material. Or you can store your key material outside of Salesforce and have the Cache-Only Key Service fetch your key material on demand.

Important: Where possible, we changed noninclusive terms to align with our company value of Equality. We maintained certain terms to avoid any effect on customer implementations.

Key management begins with assigning security administrators the appropriate permissions. Assign permissions to people you trust to encrypt data, manage certificates, and work with key material. It's a good idea to monitor these users' key management and encryption activities with the Setup Audit Trail. Authorized developers can generate, rotate, export, destroy, reimport, and upload tenant secrets by coding a call to the TenantSecret object in the Salesforce API.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To manage key material:
- Manage Encryption Keys

IN THIS SECTION:

Work with Key Material
Shield Platform Encryption lets you generate a unique tenant secret for your org, or generate a tenant secret or key material using your own external resources. In either case, you manage your own key material: You can rotate it, archive it, and designate other users to share responsibility for it.

Rotate Your Encryption Tenant Secrets
You control the lifecycle of your data encryption keys by controlling the lifecycle of your tenant secrets. Salesforce recommends that you regularly generate or upload new Shield Platform Encryption key material. When you rotate a tenant secret, you replace it with either a Salesforce-generated tenant secret or customer-supplied key material.

Back Up Your Tenant Secrets
Your Shield Platform Encryption tenant secret is unique to your org and to the specific data to which it applies. Salesforce recommends that you export your tenant secret to ensure continued access to the related data.

Get Statistics About Your Encryption Coverage
The Encryption Statistics page provides an overview of all data encrypted with Shield Platform Encryption. This information helps you to stay on top of your key rotation and management tasks. You can also use encryption statistics to identify which objects and fields you may want to update after you rotate your key material.

Synchronize Your Data Encryption with the Background Encryption Service
Periodically, you change your encryption policy. Or you rotate your keys. To get the most protection out of your encryption strategy with Shield Platform Encryption, synchronize new and existing encrypted data under your most recent encryption policy and keys. You can do this yourself or ask Salesforce for help.

Destroy Key Material
Only destroy Shield Platform Encryption tenant secrets and key material in extreme cases where access to related data is no longer needed. Your key material is unique to your org and to the specific data to which it applies. Once you destroy key material, related data is not accessible unless you import previously exported key material.

Require Multi-Factor Authentication for Key Management

Multi-factor authentication (MFA) is a powerful tool for securing access to data and resources. Salesforce requires the use of MFA for all logins to your org's user interface. In addition, you can add extra security by also requiring MFA for Shield Platform Encryption key management tasks like generating, rotating, or uploading key material and certificates.

Bring Your Own Key (BYOK)

When you supply your own tenant secret, you get the benefits built-in to Salesforce Shield Platform Encryption, plus the extra assurance that comes from exclusively managing your tenant secret.

Cache-Only Key Service

Shield Platform Encryption's Cache-Only Key Service addresses a unique need for non-persisted key material. You can store your key material outside of Salesforce and have the Cache-Only Key Service fetch your key on demand from a key service that you control. Your key service transmits your key over a secure channel that you configure, and the Cache-Only Key Service uses your key for immediate encrypt and decrypt operations. Salesforce doesn't retain or persist your cache-only keys in any system of record or backups. You can revoke key material at any time.

Work with Key Material

Shield Platform Encryption lets you generate a unique tenant secret for your org, or generate a tenant secret or key material using your own external resources. In either case, you manage your own key material: You can rotate it, archive it, and designate other users to share responsibility for it.

When you generate or upload new key material, any new data is encrypted using this key. This is now your active key. However, existing sensitive data remains encrypted using previous keys, which are now archived. In this situation, we strongly recommend re-encrypting this data with your active key. You can synchronize your data with the active key material on the Encryption Statistics and Data Sync.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To manage key material:
- Manage Encryption Keys

Rotate Your Encryption Tenant Secrets

You control the lifecycle of your data encryption keys by controlling the lifecycle of your tenant secrets. Salesforce recommends that you regularly generate or upload new Shield Platform Encryption key material. When you rotate a tenant secret, you replace it with either a Salesforce-generated tenant secret or customer-supplied key material.

Important: Where possible, we changed noninclusive terms to align with our company value of Equality. We maintained certain terms to avoid any effect on customer implementations.

To decide how often to rotate your tenant secrets, consult your security policies. How frequently you can rotate key material depends on the tenant secret type and environment. You can rotate tenant secrets one time per interval.

Table 1: Tenant Secret Rotation Intervals

Tenant Secret Type	Production Environments	Sandbox Environments
Fields and Files (Probabilistic)	24 hours	4 hours
Fields (Deterministic)	7 days	4 hours
Analytics	24 hours	4 hours
Search Index	7 days	7 days
Event Bus	7 days	7 days

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To generate, destroy, export, import, upload, and configure tenant secrets and customer-supplied key material:

- Manage Encryption Keys

The key derivation function uses a primary secret (KDF seed, or formerly master secret), which is rotated with each major Salesforce release. Primary secret rotation doesn't affect your encryption keys or your encrypted data until you rotate your tenant secret.

1. From Setup, in the Quick Find box, enter `Platform Encryption`, and then select **Key Management**.
2. In the Key Management Table, select a key type.
3. Check the status of the data type's tenant secrets. Existing tenant secrets are listed as active, archived, or destroyed.

   Active
   Can be used to encrypt and decrypt new and existing data.

   Archived
   Can't encrypt new data. Can be used to decrypt data previously encrypted with this key when it was active.

   Destroyed
   Can't encrypt or decrypt data. Data encrypted with this key when it was active can no longer be decrypted. Files and attachments encrypted with this key can no longer be downloaded.

4. Click **Generate Tenant Secret** or **Bring Your Own Key**. If uploading a customer-supplied tenant secret, upload your encrypted tenant secret and tenant secret hash.

   Note: You can have up to 50 active and archived tenant secrets of each type. For example, you can have one active and 49 archived Fields and Files (Probabilistic) tenant secrets, and the same number of Analytics tenant secrets. This limit includes Salesforce-generated and customer-supplied key material.

   If you run into this limit, destroy an existing key before reactivating, rearchiving, or creating a callout to another one. Before destroying a key, synchronize the data it encrypts with an active key.

5. If you want to re-encrypt field values with your active key material, synchronize new and existing encrypted data under your most recent and keys. You can sync data from the Encryption Statistics and Data Sync page in Setup.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Back Up Your Tenant Secrets

Your Shield Platform Encryption tenant secret is unique to your org and to the specific data to which it applies. Salesforce recommends that you export your tenant secret to ensure continued access to the related data.

1. From Setup, in the Quick Find box, enter `Platform Encryption`, and then select **Key Management**.
2. In the table that lists your keys, find the tenant secret you want to back up. Click **Export**.
3. Confirm your choice in the warning box, then save your exported file.

   The file name is `tenant-secret-org-<organization ID>-ver-<tenant secret version numer>.txt`. For example, `tenant-secret-org-00DD00000007eTR-ver-1.txt`.
4. Note the specific version you're exporting, and give the exported file a meaningful name. Store the file in a safe location so you can import it back into your org if needed.

   Note: Your exported tenant secret is itself encrypted.

Remember that exported key material is a copy of the key material in your org. To import an exported tenant secret, first destroy the original in your org. See Destroy a Tenant Secret on page 58.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To generate, destroy, export, import, upload, and configure tenant secrets and customer-supplied key material:

- Manage Encryption Keys

Get Statistics About Your Encryption Coverage

The Encryption Statistics page provides an overview of all data encrypted with Shield Platform Encryption. This information helps you to stay on top of your key rotation and management tasks. You can also use encryption statistics to identify which objects and fields you may want to update after you rotate your key material.

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge for orgs created in Summer '15 and later.

Available in both Salesforce Classic and Lightning Experience.

IN THIS SECTION:

Gather Encryption Statistics

The Encryption Statistics and Data Sync page shows you how much of your data is encrypted by Shield Platform Encryption, and how much of that data is encrypted by active key material. Use this information to inform your key rotation actions and timelines. You can also use the Encryption Statistics page to collect information about the fields and objects you want to synchronize with the background encryption service.

Interpret and Use Encryption Statistics

The Encryption Statistics page offers a snapshot of your encrypted data. You can use the information to help you make informed decisions about managing your encrypted data.

Gather Encryption Statistics

The Encryption Statistics and Data Sync page shows you how much of your data is encrypted by Shield Platform Encryption, and how much of that data is encrypted by active key material. Use this information to inform your key rotation actions and timelines. You can also use the Encryption Statistics page to collect information about the fields and objects you want to synchronize with the background encryption service.

1. From Setup, in the Quick Find box, enter `Platform Encryption`, and then select **Encryption Statistics**.
2. Select an object type or custom object from the left pane. If you see a "--" in the Data Encrypted or Uses Active Key columns, you haven't gathered statistics for that object yet.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To view Platform Encryption Setup pages:

- View Setup and Configuration

  And

  Customize Application

Object	Data Encrypted	Uses Active Key	Sync Needed
Account	50%	50%	Yes
Case	100%	100%	No
Contact	93%	93%	Yes
Lead	25%	25%	Yes
Opportunity	--	--	Yes
Attachment	--	--	Yes

3. Click **Gather Statistics**.
   The gathering process time varies depending on how much data you have in your object. You're notified by email when the gathering process is finished. When your statistics are gathered, the page shows updated information about data for each object. If encryption for field history and feed tracking is turned on, you also see stats about encrypted field history and feed tracking changes.

Note:

- You can gather statistics once every 24 hours, either by clicking **Gather Statistics** or running the self-service background encryption service.

- Feed Item doesn't display statistics because it's derived from Feed Post. Gathering statistics for Feed Post is sufficient to confirm the encryption status of both Feed Post and Feed Item.

Interpret and Use Encryption Statistics

The Encryption Statistics page offers a snapshot of your encrypted data. You can use the information to help you make informed decisions about managing your encrypted data.

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

The page offers two views of your encrypted data: a summary view and a detail view.

Encryption Summary View

The Encryption Summary View lists all your objects that contain encrypted data and statistics about the encrypted data in those objects.

Object	Data Encrypted	Uses Active Key	Sync Needed
Account	50%	50%	Yes
Case	100%	100%	No
Contact	93%	93%	Yes
Lead	25%	25%	Yes
Opportunity	--	--	Yes
Attachment	--	--	Yes

- Object—Lists your standard and custom objects. Data about standard objects are aggregated for all standard objects of a given type. Data about custom objects are listed for each custom object.
- Data Encrypted—The total percentage of data in an object that's encrypted. In the example above, 50% of all data in Account objects are encrypted.
- Uses Active Key—The percentage of your encrypted data in that object or object type that's encrypted with your active key material.
- Sync Needed—Recommends whether to synchronize your data with the background encryption service. This column displays Yes when you add or disable encryption on fields, change a field's encryption scheme, or rotate key material.

When the numbers in the Data Encrypted and Uses Active Key columns are the same, and the Sync Needed column is No, all your encrypted data is synchronized. In the example above, the Case object is synchronized.

Sometimes the Sync Needed column is Yes for an object when the Encrypted Data and Uses Active Key columns have the same values. This combination of values happens when encryption policy settings or keys change since the last time you gathered statistics or synchronized your data. This combination also happens when statistics are gathered for newly encrypted data but the object hasn't been synchronized. In the example above, the Account, Contact, Lead, and Opportunity objects meet one or more of these conditions.

A double dash (--) means that statistics haven't been gathered for that object or object type yet. In the example, statistics haven't been gathered for the Opportunity and Attachment objects.

Encryption Detail View

The Encryption Detail View shows statistics about the field and historical data stored in each object category. If encryption for field history and feed tracking is turned on, you can also view stats about encrypted field history and feed tracking changes.

Fields

The Fields tab displays data about field data in each object.

- Field—All encryptable standard and custom fields in the object that contain data

  Note: Not all field data is stored in the same field that displays data in the UI. For example, some Person Account field data is stored in the corresponding Contact fields. If you have Person Accounts enabled but don't see encrypted fields under the Account detail view, gather statistics for the Contact object and check there.

  Similarly, Chatter data is stored in the Feed Attachment, Feed Comment, Feed Poll Choice, Feed Post, and Feed Revision objects. The Encryption Statistics page lists these objects and all fields that hold encrypted Chatter data in the database. Some fields listed on the Encryption Statistics page aren't visible in the UI by the same name, but they store all encrypted data that's visible in the UI. See Which Standard Fields Can I Encrypt? in *Salesforce Help* for a list of the encrypted Chatter fields.

- API Name—The API name for fields that contain data.
- Encrypted Records—The number of encrypted values stored in a field type across all objects of a given type. For example, you select the Account object and see "9" in the Encrypted Records column next to Account Name. That means there are nine encrypted records across all Account Name fields.
- Unencrypted Records—The number of plaintext values stored in a field type.
- Mixed Tenant Secret Status—Indicates whether a mixture of active and archived tenant secrets apply to encrypted data in a field type.
- Mixed Schemes— Indicates whether a mixture of deterministic and probabilistic encryption schemes apply to encrypted data in a field type.

Note: For encrypted and unencrypted records:

- The records count for a field doesn't include NULL or BLANK values. A field with NULL or BLANK values can show a different (smaller) records count than the actual number of records.
- The records count for compound fields such as Contact.Name or Contact.Address can show a different (larger) records count than the actual number of records. The count includes the two or more fields that are counted for every record.

History

The History tab shows data about field history and feed tracking changes.

- Field—All encryptable standard and custom fields in the object that contain data.
- API Name—The API name for fields that contain data.
- Encrypted Field History—The number of encrypted field history values for a field type across all objects of a given type. For example, you select the Account object and see "2" in the Encrypted Field History column for Account Name, which means that Account Name has two encrypted field history values.
- Unencrypted Field History—The number of plaintext field history values stored for a field.
- Encrypted Feed Tracking—The number of encrypted feed tracking values stored for a field.
- Unencrypted Feed Tracking—The number of plaintext feed tracking values stored for a field.

Usage Best Practices

Use these statistics to make informed decisions about your key management tasks.

- Update encryption policies—The encryption statistics detail view shows you which fields in an object contain encrypted data. Use this information to periodically evaluate whether your encryption policies match your organization's encryption strategy.
- Rotate keys—To encrypt all your data with your active key material, review the encryption summary pane on the left side of the page. If the Uses Active Key value is lower than the Data Encrypted value, some of your data uses archived key material. To synchronize your data, click the **Sync** button or contact Salesforce Customer Support.
- Synchronize data—Key rotation is an important part of any encryption strategy. When you rotate your key material, apply the active key material to existing data. To synchronize your data with your active key, click the **Sync** button.

  If self-service background encryption is unavailable, review the Uses Active Key and Mixed Tenant Secret Status columns to identify any fields that include data encrypted with an archived key. Make a note of these objects and fields, then contact Salesforce Customer Support to request the background encryption service. Salesforce Customer Support can focus just on those objects and fields that you want to synchronize, keeping the background encryption process as short as possible.

Synchronize Your Data Encryption with the Background Encryption Service

Periodically, you change your encryption policy. Or you rotate your keys. To get the most protection out of your encryption strategy with Shield Platform Encryption, synchronize new and existing encrypted data under your most recent encryption policy and keys. You can do this yourself or ask Salesforce for help.

When a change occurs, you have options for keeping your encryption policy up to date. You can synchronize most standard and custom field data yourself from the Encryption Statistics and Data Sync page in Setup. For all other data, Salesforce is here to help ensure data alignment with your latest encryption policy and tenant secret.

When We Do and Don't Automatically Encrypt Your Data

- When you turn on encryption for specific fields or other data, newly created and edited data are automatically encrypted with the most recent key.
- Data that's already in your org doesn't automatically get encrypted. Our background encryption service takes care of that on request.
- When you change your tenant secret as part of your key rotation strategy, data that's already encrypted remains encrypted with the old tenant secret. Our background encryption service can update it on request. And don't worry, you always have access to your data as long as you don't destroy the old, archived keys.
- If you turn off encryption, data that's already there is automatically decrypted based on the relevant key. Any functionality impacted by having encrypted data is restored.
- If Salesforce support re-encrypts your data with a new key, any data that was encrypted with the destroyed key is skipped. To access data encrypted with a destroyed key, import a backup of the destroyed key.

Note: Note: Synchronizing your data encryption doesn't modify the record LastModifiedDate or LastModifiedById timestamps. It doesn't execute triggers, validation rules, workflow rules, or any other automated service. However, it does modify the SystemModStamp.

What You Can Synchronize Yourself

You can synchronize most encrypted data yourself from the Encryption Statistics page in Setup. Self-service background encryption synchronizes:

- Standard and custom fields
- The Attachment—Content Body field
- Field history and feed tracking changes when the **Encrypt Field History and Feed Tracking Values** setting is turned on

Read more about self-service background encryption on page 57, and its considerations on page 88, in Salesforce Help.

How to Request Background Encryption Service from Salesforce Customer Support

If you can't sync data yourself, contact Salesforce Customer Support for help. Keep these tips in mind when asking for help with syncing your data.

Allow lead time

Contact Salesforce support 2–3 business days before you need the background encryption completed. The time to complete the process varies based on the volume of data. It could take several days.

Specify the data

Provide the list of objects, field names, and data elements you want encrypted or re-encrypted.

Verify the list

Verify that this list matches what's encrypted in Setup:

- Data elements selected on the Encryption Policy page
- Standard fields selected on the Encrypt Standard Fields page
- Custom fields you selected for encryption on the Field Definition page

Tip: Also check that your field values aren't too long for encryption.

Include files and attachments?

Encryption for files and attachments is all or nothing. You don't have to specify which ones.

Include history and feed data?

Specify whether you want the corresponding field history and feed data encrypted.

Choose a time

Salesforce Customer Support can run the background encryption service Monday through Friday between 6 AM and 5 PM in your time zone.

Tip: If you're not sure which data is already encrypted, visit the Encryption Statistics page, which keeps a record of all fields that you have encrypted.

What If You Destroyed Your Key?

If your encryption key has been destroyed, your data can't be automatically decrypted. You have some options for handling this data.

- Reimport the destroyed key from a backup, then ask Salesforce Customer Support to synchronize your data with your encryption policy.
- Delete all the data that was encrypted with the destroyed key, then ask Salesforce Customer Support to synchronize your data.
- Ask Salesforce Customer Support to mass overwrite the data that was encrypted with the destroyed key with "?????".

Note: Keep these points in mind when disabling encryption on data encrypted with destroyed material.

- When you disable encryption for files that were encrypted with a key that's been destroyed, the files don't automatically go away. You can ask Salesforce support to delete the files.
- The automatic decryption process takes longer when you disable encryption on fields encrypted with a key that's been destroyed. Salesforce notifies you by email when the process finishes.

IN THIS SECTION:

Synchronizing your data with your active key material keeps your encryption policy up to date. You can sync data in standard and custom fields, the Attachment—Content Body field, and for field history and feed tracking changes from the Encryption Statistics and Data Sync page in Setup. To synchronize all other encrypted data, contact Salesforce Customer Support.

Sync Data with Self-Service Background Encryption

Synchronizing your data with your active key material keeps your encryption policy up to date. You can sync data in standard and custom fields, the Attachment—Content Body field, and for field history and feed tracking changes from the Encryption Statistics and Data Sync page in Setup. To synchronize all other encrypted data, contact Salesforce Customer Support.

Self-service background encryption supports all standard and custom fields, the Attachment—Content Body field, and field history and feed tracking changes. For help synchronizing other encrypted data, contact Salesforce Customer Support.

To include field history and feed tracking values in self-service background encryption processes, first turn on **Encrypt Field History and Feed Tracking Values** on the Encryption Settings page. You can also enable field history and feed tracking encryption programmatically with the PlatformEncryptionSettings metadata type. When this setting is turned on, the self-service background encryption process applies your active key material to your field history and feed tracking values.

1. From Setup, in the Quick Find box, enter `Platform Encryption`, and then select **Encryption Statistics**.
2. Select an object type or custom object from the left pane.

   Note: The Sync Needed column indicates when to synchronize your data. This column displays Yes when you add or remove encryption on fields, rotate keys, or change a field's encryption scheme.

3. Click **Sync**.
   Supported standard and custom fields are encrypted with your active key material and encryption policy in the background. After the service syncs your data, it gathers statistics for the object. To view your gathered statistics, wait for your verification email and then refresh the Encryption Statistics and Data Sync page.

Note: The sync process time varies depending on how much data you have in your object. You get an email notification when the sync process finishes. You can sync your data from the Encryption Statistics and Data Sync page once every 7 days.

If you have lots of data in Attachment—Content Body fields, the sync process breaks your request into batches and syncs them in sequence. However, sometimes we can't encrypt all these batches at once. This service protection helps Salesforce maintain functional network loads. If the sync process finishes but the encryption statistics status is less than 100% complete, click **Sync** again. The background encryption service picks up where it left off.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

View Platform Encryption Setup pages:
- View Setup and Configuration

Destroy Key Material

Only destroy Shield Platform Encryption tenant secrets and key material in extreme cases where access to related data is no longer needed. Your key material is unique to your org and to the specific data to which it applies. Once you destroy key material, related data is not accessible unless you import previously exported key material.

You are solely responsible for making sure that your data and key material are backed up and stored in a safe place. Salesforce can't help you with deleted, destroyed, or misplaced tenant secrets and keys.

1. From Setup, in the Quick Find box, enter `Platform Encryption`, and then select **Key Management**.
2. In the table that lists your tenant secrets, find the row that contains the one you want to destroy. Click **Destroy**.
3. A warning box appears. Type in the text as shown and select the checkbox acknowledging that you're destroying a tenant secret, then click **Destroy**.
   After you destroy the key that encrypted the content, file previews and content that was already cached in the user's browser may still be visible in cleartext. When the user logs in again, the cached content is removed.

   If you create a sandbox org from your production org and then destroy the tenant secret in your sandbox org, the tenant secret still exists in the production org.
4. To import your tenant secret, click **Import** > **Choose File** and select your file. Make sure you're importing the correct version of the tenant secret.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To generate, destroy, export, import, upload, and configure tenant secrets and customer-supplied key material:

- Manage Encryption Keys

Require Multi-Factor Authentication for Key Management

Multi-factor authentication (MFA) is a powerful tool for securing access to data and resources. Salesforce requires the use of MFA for all logins to your org's user interface. In addition, you can add extra security by also requiring MFA for Shield Platform Encryption key management tasks like generating, rotating, or uploading key material and certificates.

Important: Make sure that you provide security administrators a way to get a time-based, one-time password. This password is their second authentication factor (in addition to their Salesforce username and password). Otherwise, they can't complete encryption key-related tasks.

1. From Setup, in the Quick Find box, enter `Identity Verification`, and then select **Identity Verification**.
2. Select **Raise session to high-assurance** from the Manage Encryption Keys dropdown.
   All admins with the Manage Encryption Keys permission must use an additional verification method to complete key management tasks through Setup and the API.

EDITIONS

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions

USER PERMISSIONS

To assign identity verification for key management tasks:

- Manage Encryption Keys

Bring Your Own Key (BYOK)

When you supply your own tenant secret, you get the benefits built-in to Salesforce Shield Platform Encryption, plus the extra assurance that comes from exclusively managing your tenant secret.

Controlling your own tenant secret entails contacting Salesforce Customer Support to enable Bring Your Own Keys, generating a BYOK-compatible certificate, using that certificate to encrypt and secure your self-generated tenant secret, then granting the Salesforce Shield Platform Encryption key management machinery access to your tenant secret.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To generate, destroy, export, import, and upload tenant secrets and customer-supplied key material:

- Manage Encryption Keys

To edit, upload, and download HSM-protected certificates with the Shield Platform Encryption Bring Your Own Key service:

- Manage Encryption Keys

  AND

  Manage Certificates

  AND

  Customize Application

IN THIS SECTION:

1. Bring Your Own Key Overview

   Yes. You can generate and store your customer-supplied key material outside of Salesforce using your own crypto libraries, enterprise key management system, or hardware security module (HSM). You then grant the Salesforce Shield Platform Encryption key management machinery access to those keys. You can choose to encrypt your keys with a public key from a self-signed or CA-signed certificate.

2. Generate a BYOK-Compatible Certificate

   To encrypt data in Salesforce with Bring Your Own Key (BYOK) key material, use Salesforce to generate a 4096-bit RSA certificate. You can generate a self-signed or certificate-authority (CA) signed certificate. Each BYOK-compatible certificate's private key is encrypted with a derived, org-specific tenant secret key.

3. Generate and Wrap BYOK Key Material

   Generate a random number as your BYOK tenant secret. Then calculate an SHA256 hash of the secret, and encrypt it with the public key from the BYOK-compatible certificate you generated.

4. Sample Script for Generating a BYOK Tenant Secret

   We've provided a helper script that may be handy for preparing your tenant secret for upload. The script generates a random number as your tenant secret, calculates an SHA256 hash of the secret, and uses the public key from the certificate to encrypt the secret.

5. Upload Your BYOK Tenant Secret

   After you have your BYOK-compatible tenant secret, upload it to Salesforce. The Shield Key Management Service (KMS) uses your tenant secret to derive your org-specific data encryption key.

6. Opt Out of Key Derivation with BYOK

   If you don't want Shield Platform Encryption to derive a data encryption key for you, you can opt out of key derivation and upload your own final data encryption key. Opting out gives you even more control of the key material used to encrypt and decrypt your data.

7. Take Good Care of Your BYOK Keys

   When you create and store your own key material outside of Salesforce, it's important that you safeguard that key material. Make sure that you have a trustworthy place to archive your key material; never save a tenant secret or data encryption key on a hard drive without a backup.

8. Troubleshooting Bring Your Own Key

   Read these frequently asked questions to help you troubleshoot any problems that arise with Shield Platform Encryption's Bring Your Own Key service.

Bring Your Own Key Overview

Yes. You can generate and store your customer-supplied key material outside of Salesforce using your own crypto libraries, enterprise key management system, or hardware security module (HSM). You then grant the Salesforce Shield Platform Encryption key management machinery access to those keys. You can choose to encrypt your keys with a public key from a self-signed or CA-signed certificate.

To work with our key management machinery, your customer-supplied key material must meet these specifications:

- 256-bit size
- Encrypted with a public RSA key that is extracted from the downloaded BYOK certificate, then padded using OAEP padding
- After it's encrypted, it must be encoded in standard base64

To work with encryption keys, you need the Manage Encryption Keys permission. To generate BYOK-compatible certificates, you need the Customize Application permission.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

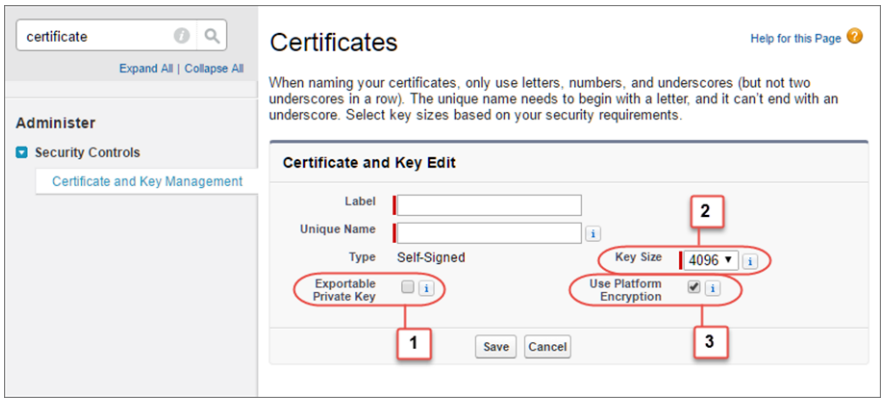
Generate a BYOK-Compatible Certificate

To encrypt data in Salesforce with Bring Your Own Key (BYOK) key material, use Salesforce to generate a 4096-bit RSA certificate. You can generate a self-signed or certificate-authority (CA) signed certificate. Each BYOK-compatible certificate's private key is encrypted with a derived, org-specific tenant secret key.

To create a self-signed certificate:

1. From Setup, in the Quick Find box, enter `Platform Encryption`, and then select **Key Management**.
2. Click **Bring Your Own Key**.
3. Click **Create Self-Signed Certificate**.
4. Enter a unique name for your certificate in the Label field. The Unique Name field automatically assigns a name based on what you enter in the Label field.

   The Exportable Private Key (1), Key Size (2), and Use Platform Encryption (3) settings are preset. (For a BYOK certificate, you must select 4096 for the key size). These settings ensure that your self-signed certificate is compatible with Salesforce Shield Platform Encryption.



5. When the Certificate and Key Detail page appears, click **Download Certificate**.

   If you're not sure whether a self-signed or CA-signed certificate is right for you, consult your organization's security policy. For more information about what each option implies, see Certificates and Keys in *Salesforce Help*.

   To create a CA-signed certificate, follow the instructions in the Generate a Certificate Signed By a Certificate Authority topic in *Salesforce Help*. To ensure that your certificate is BYOK-compatible, remember to manually change the **Exportable Private Key**, **Key Size**, and **Platform Encryption** settings.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To generate, destroy, export, import, upload, and configure tenant secrets and customer-supplied key material:

- Manage Encryption Keys

Edit, upload, and download HSM-protected certificates with the Shield Platform Encryption Bring Your Own Key service

- Manage Certificates

  AND

  Customize Application

  AND

  Manage Encryption Keys

Generate and Wrap BYOK Key Material

Generate a random number as your BYOK tenant secret. Then calculate an SHA256 hash of the secret, and encrypt it with the public key from the BYOK-compatible certificate you generated.

1. Generate a 256-bit tenant secret using the method of your choice.

   You can generate your tenant secret in one of 2 ways:

   - Use your own on-premises resources to generate a tenant secret programmatically, using an open-source library such as Bouncy Castle or OpenSSL.

     Tip: We've provided a script on page 62 that may be useful as a guide to the process.

   - Use a key brokering partner that can generate, secure, and share access to your tenant secret.

2. Wrap your tenant secret with the public key from the BYOK-compatible certificate you generated, using the default SHA1 padding algorithm.

   Specify the OAEP padding scheme. Make sure the resulting encrypted tenant secret and hashed tenant secret files are encoded using base64.

3. Encode this encrypted tenant secret to base64.
4. Calculate an SHA-256 hash of the plaintext tenant secret.
5. Encode the SHA-256 hash of the plaintext tenant secret to base64.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

Edit, upload, and download HSM-protected certificates with the Shield Platform Encryption Bring Your Own Key service:

- Manage Certificates

  AND

  Customize Application

  AND

  Manage Encryption Keys

Sample Script for Generating a BYOK Tenant Secret

We've provided a helper script that may be handy for preparing your tenant secret for upload. The script generates a random number as your tenant secret, calculates an SHA256 hash of the secret, and uses the public key from the certificate to encrypt the secret.

1. Download the script from the Salesforce Knowledge Base. Save it in the same directory as the certificate.
2. Run the script specifying the certificate name, like this: `./secretgen.sh my_certificate.crt`

   Replace this certificate name with the actual filename of the certificate you downloaded.

   Tip: If needed, use `chmod +w secretgen.sh` to make sure that you have write permission to the file and use `chmod 775` to make it executable.

3. The script generates several files. Look for the two files that end with the .b64 suffix.
   The files ending in .b64 are your base 64-encoded encrypted tenant secret and base 64-encoded hash of the plaintext tenant secret. You'll need both of these files for the next step.

EDITIONS

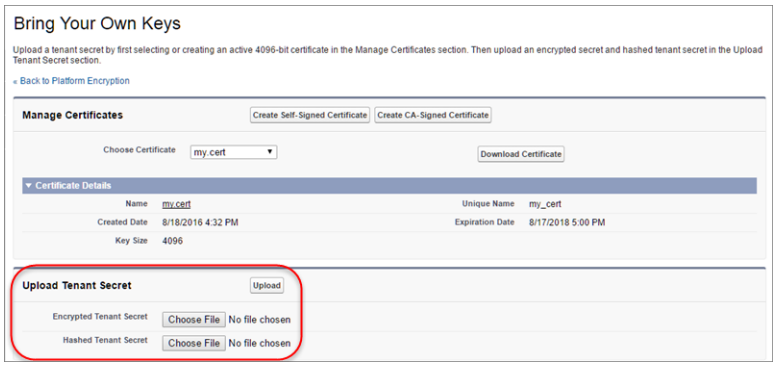
Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

Upload Your BYOK Tenant Secret

After you have your BYOK-compatible tenant secret, upload it to Salesforce. The Shield Key Management Service (KMS) uses your tenant secret to derive your org-specific data encryption key.

1. From Setup, in the Quick Find box, enter `Platform Encryption`, and then select **Key Management**.
2. In the Key Management Table, select a key type.
3. Click **Bring Your Own Key**.
4. In the Upload Tenant Secret section, attach both the encrypted key material and the hashed plaintext key material. Click **Upload**.



This tenant secret automatically becomes the active tenant secret.

Your tenant secret is now ready to be used for key derivation. From here on, the Shield KMS uses your tenant secret to derive an org-specific data encryption key. The app server then uses this key to encrypt and decrypt your users' data.

If you don't want Salesforce to derive a data encryption key for you, you can opt out of key derivation and upload your own final data encryption key. For more information, see Opt-Out of Key Derivation with BYOK in Salesforce Help.

Note: You can have up to 50 active and archived tenant secrets of each type. For example, you can have one active and 49 archived Fields and Files (Probabilistic) tenant secrets, and the same number of Analytics tenant secrets. This limit includes Salesforce-generated and customer-supplied key material.

If you reach the limit, destroy an existing key before reactivating, rearchiving, or creating a callout to another one. Before destroying a key, synchronize the data that it encrypts with an active key.

5. Export your tenant secret, and back it up as prescribed in your organization's security policy.

   To restore a destroyed tenant secret, reimport it. The exported tenant secret is different from the tenant secret you uploaded. It's encrypted with a different key and has additional metadata embedded in it. See Back Up Your Tenant Secret in Salesforce Help.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

SEE ALSO:

How Key Material Is Stored

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To generate, destroy, export, import, and upload tenant secrets and customer-supplied key material:

- Manage Encryption Keys

Opt Out of Key Derivation with BYOK

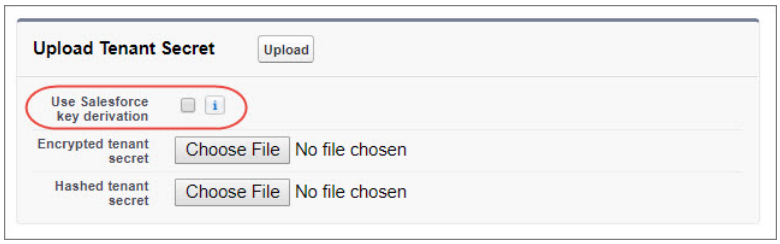
If you don't want Shield Platform Encryption to derive a data encryption key for you, you can opt out of key derivation and upload your own final data encryption key. Opting out gives you even more control of the key material used to encrypt and decrypt your data.

Generate your customer-supplied data encryption key using a method of your choice. Then calculate an SHA256 hash of the key, and encrypt it with the public key from a BYOK-compatible certificate. See Upload Your BYOK Tenant Secret for details about how to prepare customer-supplied key material.

1. Make sure that your org has the Bring Your Own Keys feature enabled. To enable this feature, contact Salesforce Customer Support.
2. From Setup, in the Quick Find box, enter `Encryption Settings`, and then select **Encryption Settings**.
3. In the Advanced Encryption Settings section, turn on **Allow BYOK to Opt-Out of Key Derivation.**

   You can also enable the Allow BYOK to Opt-Out of Key Derivation setting programmatically. For more information, see EncryptionKeySettings in the *Metadata API Developer Guide*.

   You can now opt out of key derivation when you upload key material.
4. From Setup, in the Quick Find box, enter `Key Management`, and then select **Key Management**.
5. In the Key Management Table, select a key type.
6. Click **Bring Your Own Key**.
7. Deselect **Use Salesforce key derivation**.



8. In the Upload Tenant Secret section, attach your encrypted data encryption key and your hashed plaintext data encryption key.
9. Click **Upload**.
   This data encryption key automatically becomes the active key. From now on, the Shield Key Management Service (KMS) skips the derivation process and uses your data encryption key to directly encrypt and decrypt your data. You can review the derivation status of all key material on the Key Management page.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To generate, destroy, export, import, and upload tenant secrets and customer-supplied key material:

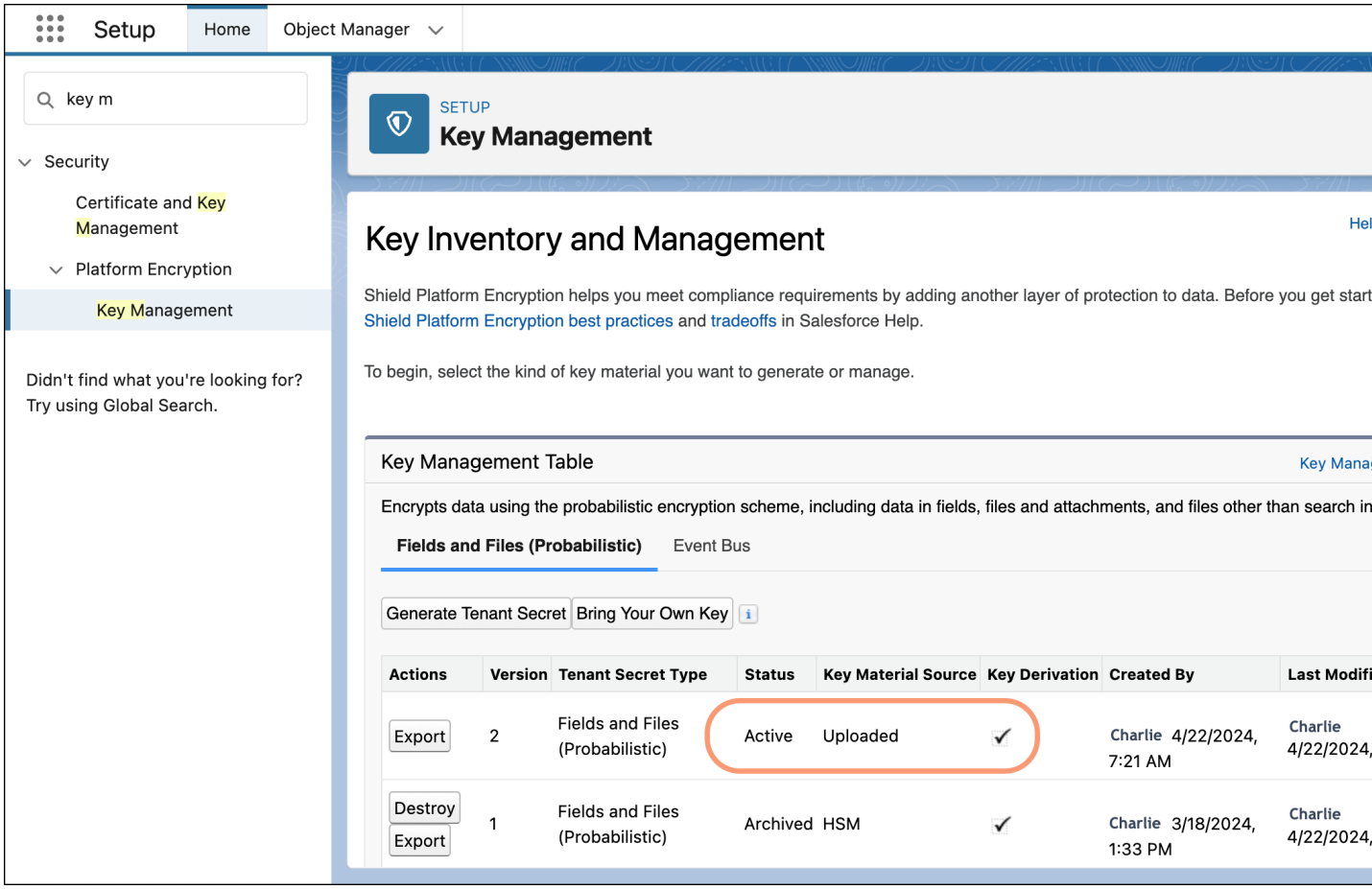
- Manage Encryption Keys

To allow BYOK to opt out of key derivation:

- Customize Application

  AND

  Manage Encryption Keys



10. Export your data encryption key and back it up as prescribed in your organization's security policy.

To restore your data encryption key, reimport it. The exported data encryption key is different from the data encryption key that you uploaded. It's encrypted with a different key and has additional embedded metadata. See Back Up Your Tenant Secret in *Salesforce Help*.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Take Good Care of Your BYOK Keys

When you create and store your own key material outside of Salesforce, it's important that you safeguard that key material. Make sure that you have a trustworthy place to archive your key material; never save a tenant secret or data encryption key on a hard drive without a backup.

Back up all imported key material after you upload them to Salesforce. This ensures that you have copies of your active key material. See Back Up Your Tenant Secret in Salesforce Help.

Review your company policy on key rotation. You can rotate and update your keys on your own schedule. See Rotate Your Encryption Keys.

Important: If you accidentally destroy a tenant secret that isn't backed up, Salesforce won't be able to help you retrieve it.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

Troubleshooting Bring Your Own Key

Read these frequently asked questions to help you troubleshoot any problems that arise with Shield Platform Encryption's Bring Your Own Key service.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

I'm trying to use the script you provide, but it doesn't run.

Make sure that you're running the right script for your operating system. If you're working on a Windows machine, you can install a Linux emulator and use the Linux script. These issues can also prevent the script from running:

- You don't have write permission in the folder you're trying to run the script from. Try running the script from a folder that you have write permission for.
- The certificate that the script references is missing. Make sure you've properly generated the certificate.
- The certificate is missing or isn't being referenced by the correct name. Make sure you've entered the correct file name for your certificate in the script.

I want to use the script you provide, but I also want to use my own random number generator.

The script we provide uses a random number generator to create a random value that is then used as your tenant secret. If you want to use a different generator, replace `head -c 32 /dev/urandom | tr '\n' =` (or, in the Mac version, `head -c 32 /dev/urandom > $PLAINTEXT_SECRET`) with a command that generates a random number using your preferred generator.

What if I want to use my own hashing process to hash my tenant secret?

No problem. Just make sure that the result meets these requirements:

- Uses an SHA-256 algorithm.
- Results in a base64 encoded hashed tenant secret.
- Generates the hash of the random number BEFORE encrypting it.

If any of these three criteria aren't met, you can't upload your tenant secret.

How should I encrypt my tenant secret before I upload it to Salesforce?

If you're using the script provided, the encryption process is taken care of. If you don't use the script, specify the OAEP padding scheme when you encrypt your tenant secret. Make sure the resulting encrypted tenant secret and hashed tenant secret files are encoded using base64. If either of these criteria aren't met, you can't upload your tenant secret.

If you choose to not use the script provided, follow the instructions in the Generate And Wrap Your Tenant Secret Help topic.

I can't upload my Encrypted tenant secret and Hashed tenant secret.

A handful of errors can prevent your files from uploading. Use the chart to make that sure your tenant secrets and certificates are in order.

Possible cause	Solution
Your files were generated with an expired certificate.	Check the date on your certificate. If it has expired, you can renew your certificate or use another one.
Your certificate isn't active, or isn't a valid Bring Your Own Key certificate.	Ensure that your certificate settings are compatible with the Bring Your Own Key feature. Under the Certificate and Key Edit section of the Certificates page, select a 4096-bit certificate size, disable Exportable Private Key, and enable Platform Encryption.
You haven't attached both the encrypted tenant secret and the hashed tenant secret.	Make sure that you attach both the encrypted tenant secret and the hashed tenant secret. Both of these files should have a .b64 suffix.
Your tenant secret or hashed tenant secret wasn't generated properly.	Several problems can cause this error. Usually, the tenant secret or hashed tenant secret wasn't generated using the correct SSL parameters. If you're using OpenSSL, you can refer to the script for an example of the correct parameters you should use to generate and hash your tenant secret. If you're using a library other than OpenSSL, check that library's support page for help with finding the correct parameters to both generate and hash your tenant secret. Still stuck? Contact your Salesforce account executive. They'll put you in touch with someone at Salesforce who can help.

I'm still having problems with my key. Who should I talk to?

If you still have questions, contact your account executive. They'll put you in touch with a support team specific to this feature.

Cache-Only Key Service

Shield Platform Encryption's Cache-Only Key Service addresses a unique need for non-persisted key material. You can store your key material outside of Salesforce and have the Cache-Only Key Service fetch your key on demand from a key service that you control. Your key service transmits your key over a secure channel that you configure, and the Cache-Only Key Service uses your key for immediate encrypt and decrypt operations. Salesforce doesn't retain or persist your cache-only keys in any system of record or backups. You can revoke key material at any time.

EDITIONS

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption, and the Cache-Only Key Service.

Available in both Salesforce Classic and Lightning Experience.

IN THIS SECTION:

1. How Cache-Only Keys Works

   The Shield Platform Encryption Cache-Only Key Service lets you use a variety of key services to generate, secure, and store your key material. You can use an on-premises key service, host your own cloud-based key service, or use a cloud-based key brokering vendor.

2. Prerequisites and Terminology for Cache-Only Keys
   Shield Platform Encryption's Cache-Only Key Service offers you more control over your key material. When you use cache-only keys, you control more of the key management tasks. Before you start using the service, understand how to create and host your key material in a way that's compatible with Salesforce's BYOK service.
3. Create and Assemble Your Key Material
   The Shield Platform Encryption Cache-Only Key Service is compatible with 256-bit AES keys returned in a JSON response, and then wrapped using JSON Web Encryption (JWE).
4. Configure Your Cache-Only Key Callout Connection
   Use a named credential to specify the endpoint for your callout, and identify the key that you want to fetch from your endpoint.
5. Add Replay Detection for Cache-Only Keys
   Replay detection protects your cache-only keys if a callout is fraudulently intercepted. When enabled, replay detection inserts an autogenerated, unique marker called a RequestIdentifier into every callout. The RequestIdentifier includes the key identifier, a nonce generated for that callout instance, and the nonce required from the endpoint. The RequestIdentifier serves as a random, one-time identifier for each valid callout request. After you set up your key service to accept and return the RequestIdentifier, any callout with missing or mismatched RequestIdentifiers is aborted.
6. Check Your Cache-Only Key Connection
   Because your cache-only key material is stored outside of Salesforce, it's important to maintain a functional callout connection. Use the Callout Check page to monitor your connection and quickly respond to key service interruptions that could prevent the service from fetching your keys.
7. Destroy a Cache-Only Key
   When you destroy a cache-only key, you're destroying two things: the key in the cache and the callout connection to the key service.
8. Reactivate a Cache-Only Key
   If you still have your named credential associated with a key that was destroyed in Salesforce, you can reactivate a destroyed cache-only key from Setup or programmatically through the API. Reactivating a destroyed key makes it the active key. Before you reactivate a destroyed key, make sure that the corresponding key service connection is recovered.
9. Considerations for Cache-Only Keys
   These considerations apply to all data that you encrypt using the Shield Platform Encryption Cache-Only Key Service.
10. Troubleshoot Cache-Only Keys
    One or more of these frequently asked questions may help you troubleshoot any problems that arise with Shield Platform Encryption's Cache-Only Key Service.

SEE ALSO:

How Key Material Is Stored

How Cache-Only Keys Works

The Shield Platform Encryption Cache-Only Key Service lets you use a variety of key services to generate, secure, and store your key material. You can use an on-premises key service, host your own cloud-based key service, or use a cloud-based key brokering vendor.

Figures 1 and 2 show how Salesforce fetches keys on-demand from your specified key service. Whether you store your keys with an on-premises key service or a cloud-based key service, the flow is the same. When users access encrypted data, or add sensitive data to encrypted data elements, the Cache-Only Key Service makes a callout to your key service. Your key service passes key material, wrapped securely in JSON Web Encryption format, through a secure, authenticated channel that you set up.

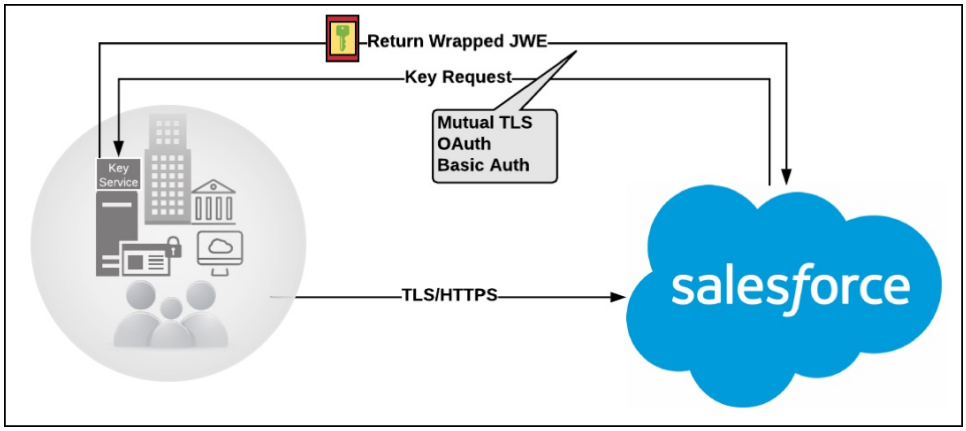


Figure 1: On-premises Key Service

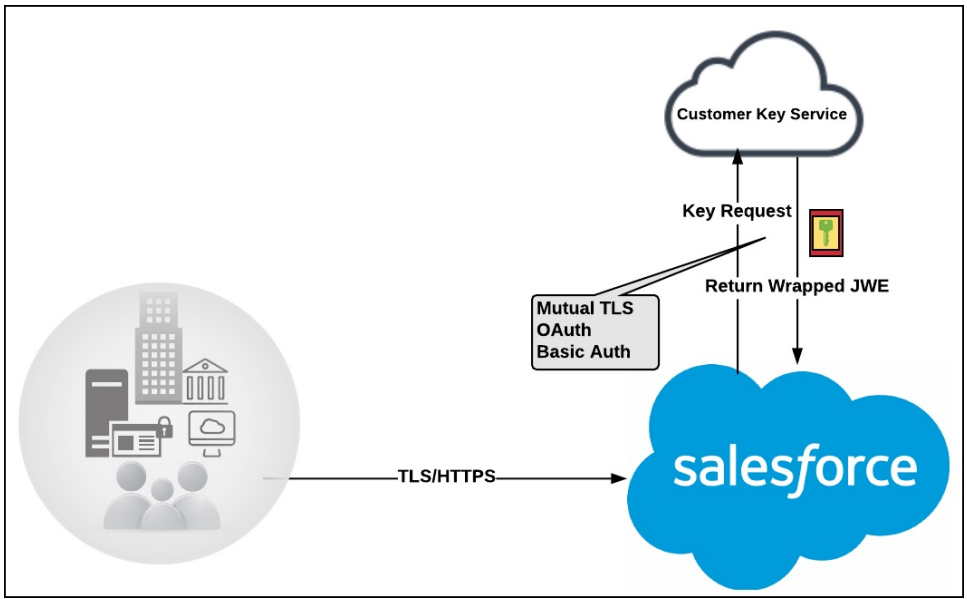


Figure 2: Cloud-Based Key Service

As a core offering of the Shield KMS, enhanced cache controls ensure that key material is stored securely while in the cache. The Shield KMS encrypts the fetched key material with an org-specific AES 256-bit cache encryption key and stores the encrypted key material in the cache for encrypt and decrypt operations. HSM-protected keys secure the cache encryption key in the cache, and the cache encryption key is rotated along with key lifecycle events such as key destruction and rotation.

The enhanced cache controls provide a single source of truth for key material used to encrypt and decrypt your data. Subsequent encryption and decryption requests go through the encrypted key cache until the cache-only key is revoked or rotated, or the cache is flushed. Once the cache is flushed, the Cache-Only Key Service fetches key material from your specified key service. The cache is regularly flushed every 72 hours, and certain Salesforce operations flush the cache on average every 24 hours. Destroying a data encryption key invalidates the corresponding data encryption key that's stored in the cache.

Because cache-only keys bypass the key derivation process, they're used to directly encrypt and decrypt your data.

Prerequisites and Terminology for Cache-Only Keys

Shield Platform Encryption's Cache-Only Key Service offers you more control over your key material. When you use cache-only keys, you control more of the key management tasks. Before you start using the service, understand how to create and host your key material in a way that's compatible with Salesforce's BYOK service.

Prerequisites

- Prepare your Salesforce org. Make sure that your org has at least one active Data in Salesforce key, either Salesforce-generated or customer-supplied. You can create a tenant secret by clicking **Generate Tenant Secret** on the Key Management page in Setup.
- Generate and host key material. The cache-only key exchange protocol and format requires that keys are wrapped in an opinionated JSON Web Encryption (JWE). This format uses RSAES-OAEP for key encryption and AES GCM for content encryption.

  Use a secure, trusted service to generate, store, and back up your key material.
- Use and maintain a reliable high-availability key service. To mitigate any potential impact to business continuity, choose a high-availability key service with an acceptable service level agreement (SLA), predefined maintenance procedures, and processes.

  When the connection between Salesforce and your key service is broken, the Cache-Only Key Service can encrypt and decrypt data as long as your key material is in the cache. However, keys don't stay in the cache for long. The cache is regularly flushed every 72 hours, but some Salesforce operations flush the cache about every 24 hours.

  If your key material isn't in the cache and the connection to your key service is broken, users can't encrypt or decrypt records. Make sure that you use a key service that Salesforce can connect to at any time, especially during busy times, such as the end of the year or quarter.
- Maintain a secure callout endpoint. The cache-only key exchange protocol requires that keys are wrapped in an opinionated JSON format. Host your wrapped key inside the key response at a location Salesforce can request.

  The Catch-Only Key Service uses named credentials to establish a secure, authenticated connection to allowed IP addresses and domains. You can configure your named credentials to use popular authentication formats, such as Mutual TLS and OAuth. You can change these authentication protocols at any time.
- Actively monitor your key service logs for errors. While Salesforce is here to help you with the Shield Platform Encryption service, you're responsible for maintaining the high-availability key service that you use to host your key material. You can use the RemoteKeyCalloutEvent object to review or track cache-only key events.

  Warning: Because you're in control of your keys, you're responsible for securing and backing up your key material. Salesforce can't retrieve lost key material stored outside of our encrypted key cache.
- Know how to format and assemble your key material. Format key material hosted outside of Salesforce in a way that's compatible with the Cache-Only Key Service. Make sure that you can generate these components in the required formats.

Table 2: Cache-Only Key Components

Component	Format
Data encryption key (DEK)	AES 256-bit
Content encryption key (CEK)	AES 256-bit
BYOK-compatible certificate	A 4096-bit RSA certificate whose private key is encrypted with a derived, org-specific tenant secret key
JSON Web Encryption content and header	See a sample in Github
Algorithm for encrypting the CEK	RSA-OAEP

Component	Format
Algorithm for encrypting the DEK	A256GCM
Unique key identifier	Allows numbers, uppercase and lowercase letters, periods, hyphens, and underscores
Initialization vector	Encoded in base64url
JSON web token ID (JTI)	A 128-bit hex encoded, randomly generated identifier

Read more about assembling your key material in the Generate and Assemble Cache-Compatible Keys section. You can also look at our Cache-Only Key Wrapper in Github for examples and sample utility.

Terminology

Here are some terms that are specific to the Cache-Only Key Service.

Content Encryption Key
For each key request, your key service endpoint generates a unique content encryption key. The content encryption key wraps the data encryption key, which is then encrypted by the key encrypting key. After that it is placed in the JWE header of the key response.

JSON Web Encryption
The JSON-based structure that the Shield Platform Encryption service uses to encrypt content. JSON Web Encryption, or JWE, uses RSAES-OAEP for key encryption and AES GCM for content encryption.

JSON Web Token ID
A unique identifier for the JSON web token, which enables identity and security information to be shared across security domains.

Key Identifier
The Key ID, or KID, is the unique identifier for your key. The KID is used as the suffix in the named credential and for validation of the KID in the response. In Setup, enter this identifier in the Unique Key Identifier field.

Create and Assemble Your Key Material

The Shield Platform Encryption Cache-Only Key Service is compatible with 256-bit AES keys returned in a JSON response, and then wrapped using JSON Web Encryption (JWE).

Cache-only key material is wrapped in a JSON format. An example cache-only key is used throughout this article to illustrate how key material changes as you assemble it.

1. Generate a 256-bit AES data encryption key. You can use the cryptographically secure method of your choice.
2. Generate a 256-bit AES content encryption key by using a cryptographically secure method.
3. Generate and download your BYOK-compatible certificate.
4. Create the JWE protected header. The JWE protected header is a JSON object with three claims: the algorithm used to encrypt the content encryption key, the algorithm used to encrypt the data encryption key, and the unique ID of the cache-only key. Here's an example header to get us started.

```
{"alg":"RSA-OAEP","enc":"A256GCM","kid":"982c375b-f46b-4423-8c2d-4d1a69152a0b"}
```

5. Encode the JWE protected header as BASE64URL(UTF8(JWE Protected Header)).


```
eyJhbGciOiJSU0EtT0FFUCIsImVuYyI6IkEyNTZHQ00iLCJraWQiOiI5ODJjMzc1Yi1mNDZiLTQ0MjMtOGMy
ZC00ZDFhNjkxNTJhMGIifQ
```


6. Encrypt the content encryption key with the public key from the BYOK certificate using the RSAES-OAEP algorithm. Then encode this encrypted content encryption key as BASE64URL(Encrypted CEK).


```
l92QA-R7b6Gtjo0tG4GlylJti1-Pf-519YpStYOp28YToMxgUxPmx4NR_myvfT24oBCWkh6hy_dqAL7JlVO4
49EglAB_i9GRdyVbTKnJQ1OiVKwWUQaZ9jVNxFFUYTWWZ-sVK4pUw0B3lHwWBfpMsl4jf0exP5-5amiTZ5oP
0rkW99ugLWJ_7XlyTuMIA6VTLSpL0YqChH1wQjo12TQaWG_tiTwL1SgRd3YohuMVlmCdEmR2TfwTvryLPx4K
bFK3Pv5ZSpSIyreFTh12DPpmhLEAVhCBZxR4-HMnZySSs4QorWagOaT8XPjPv46m8mUATZSD4hab8v3Mq4H3
3CmwngZCJXX-sDHuax2JUejxNC8HT5p6sa_I2gQFMlBC2Sd4yBKyjlDQKcSslCVav4buG8hkOJXY69iW_zhz
tV3DoJJ90l-EvkMoHpw1llU9lFhJMUQRvvocfghs2kzy5QC8QQt4t4Wu3p7IvzeneL5I81QjQlDJmZhbLLor
FHgcAs9_FMwnFYFrgsHP1_v3Iqy7zJJc60fCfDaxAF8Txj_LOeOMkCFl-9PwrULWyRTLMI7CdZIm7jb8v9AL
xCmDgqUi1yvEeBJhgMLezAWtxvGGkejc0BdsbWaPFXlI3Uj7C-Mw8LcmpSLKZyEnhj2x-3Vfv5hIVauC6ja1
B6Z_UcqXKOc
```


7. Generate an initialization vector for use as input to the data encryption key's AES wrapping. Then encode it in base64url.


```
N2WVMbpAxipAtG9O
```


8. Wrap your data encryption key with your content encryption key.
   a. Encode the JWE header as ASCII(BASE64URL(UTF8(JWE Protected Header))).
   b. Reform authenticated encryption on the data encryption key with the AES GCM algorithm. Use the content encryption key as the encryption key, the initialization vector (the bytes, not the base64 URL encoded version), and the Additional Authenticated Data value, requesting a 128-bit Authentication Tag output.
   c. Encode the resulting ciphertext as BASE64URL(Ciphertext).
   d. Encode the Authentication Tag as BASE64URL(Authentication Tag).


```
63wRVVKX0ZOxu8cKqN1kqN-7EDa_mnmk32DinS_zFo4
```


and


```
HC7Ev5lmsbTgwyGpeGH5Rw
```


9. Assemble your JWE as a compact serialization of all the preceding values. Concatenate values separated by a period.


```
eyJhbGciOiJSU0EtT0FFUCIsImVuYyI6IkEyNTZHQ00iLCJraWQiOiI5ODJjMzc1Yi1mNDZiLTQ0MjMtOGMy
ZC00ZDFhNjkxNTJhMGIifQ.l92QA-R7b6Gtjo0tG4GlylJti1-Pf-519YpStYOp28YToMxgUxPmx4NR_myvf
T24oBCWkh6hy_dqAL7JlVO449EglAB_i9GRdyVbTKnJQ1OiVKwWUQaZ9jVNxFFUYTWWZ-sVK4pUw0B3lHwWB
fpMsl4jf0exP5-5amiTZ5oP0rkW99ugLWJ_7XlyTuMIA6VTLSpL0YqChH1wQjo12TQaWG_tiTwL1SgRd3Yoh
uMVlmCdEmR2TfwTvryLPx4KbFK3Pv5ZSpSIyreFTh12DPpmhLEAVhCBZxR4-HMnZySSs4QorWagOaT8XPjPv
46m8mUATZSD4hab8v3Mq4H33CmwngZCJXX-sDHuax2JUejxNC8HT5p6sa_I2gQFMlBC2Sd4yBKyjlDQKcSsl
CVav4buG8hkOJXY69iW_zhztV3DoJJ90l-EvkMoHpw1llU9lFhJMUQRvvocfghs2kzy5QC8QQt4t4Wu3p7Iv
zeneL5I81QjQlDJmZhbLLorFHgcAs9_FMwnFYFrgsHP1_v3Iqy7zJJc60fCfDaxAF8Txj_LOeOMkCFl-9Pwr
ULWyRTLMI7CdZIm7jb8v9ALxCmDgqUi1yvEeBJhgMLezAWtxvGGkejc0BdsbWaPFXlI3Uj7C-Mw8LcmpSLKZ
yEnhj2x-3Vfv5hIVauC6ja1B6Z_UcqXKOc.N2WVMbpAxipAtG9O.63wRVVKX0ZOxu8cKqN1kqN-7EDa_mnmk
32DinS_zFo4.HC7Ev5lmsbTgwyGpeGH5Rw
```


For more detailed examples of this process, check out the sample Cache-Only Key Wrapper in Github. You can use either the utility in this repository or another service of your choosing.

Configure Your Cache-Only Key Callout Connection

Use a named credential to specify the endpoint for your callout, and identify the key that you want to fetch from your endpoint.

1. Make sure that your org has at least one active Fields and Files (Probabilistic) key, either Salesforce-generated or customer-supplied. You can create a tenant secret by clicking **Generate Tenant Secret** on the Key Management page in Setup.
2. From Setup, in the Quick Find box, enter `Named Credential`, and then select **Named Credential**.

   Tip: A named credential provides an authenticated callout mechanism through which Salesforce can fetch your key material. Because named credentials are allowlisted, they're a secure and convenient channel for key material stored outside of Salesforce.

   Learn more about named credentials, how to define a named credential, and how to grant access to authentication settings for named credentials in Salesforce Help.

3. Create a named credential. Specify an HTTPS endpoint from which Salesforce can fetch your key material.
4. From Setup, in the Quick Find box, enter `Encryption Settings`, and then select **Encryption Settings**.
5. In the Advanced Encryption Settings section, turn on **Allow Cache-Only Keys**.

   You can also enable the Cache-Only Key Service programmatically. For more information, see EncryptionKeySettings in the *Metadata API Developer Guide*.

   Note: If you turn off **Allow Cache-Only Keys**, data that's encrypted with cache-only key material remains encrypted and Salesforce continues to invoke secured callouts. However, you can't modify your cache-only key configuration or add new ones. If you don't want to use cache-only keys, rotate your key material to use customer-supplied (BYOK) key material. Then synchronize all your data, and turn off **Allow Cache-Only Keys**.

6. From Setup, in the Quick Find box, enter `Platform Encryption`, and then select **Key Management**.
7. In the Key Management Table, select a key type.
8. Click **Bring Your Own Key**.
9. Select a BYOK-compatible certificate from the Choose Certificate dropdown.
10. Select **Use a Cache-Only Key**.
11. For Unique Key Identifier, enter your KID—the unique key identifier for your data encryption key. Your identifier can be a number, a string (2018_data_key), or a UUID (982c375b-f46b-4423-8c2d-4d1a69152a0b).
12. In the Named Credential dropdown, select the named credential associated with your key. You can have multiple keys associated with each named credential.

EDITIONS

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption, and the Cache-Only Key Service.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

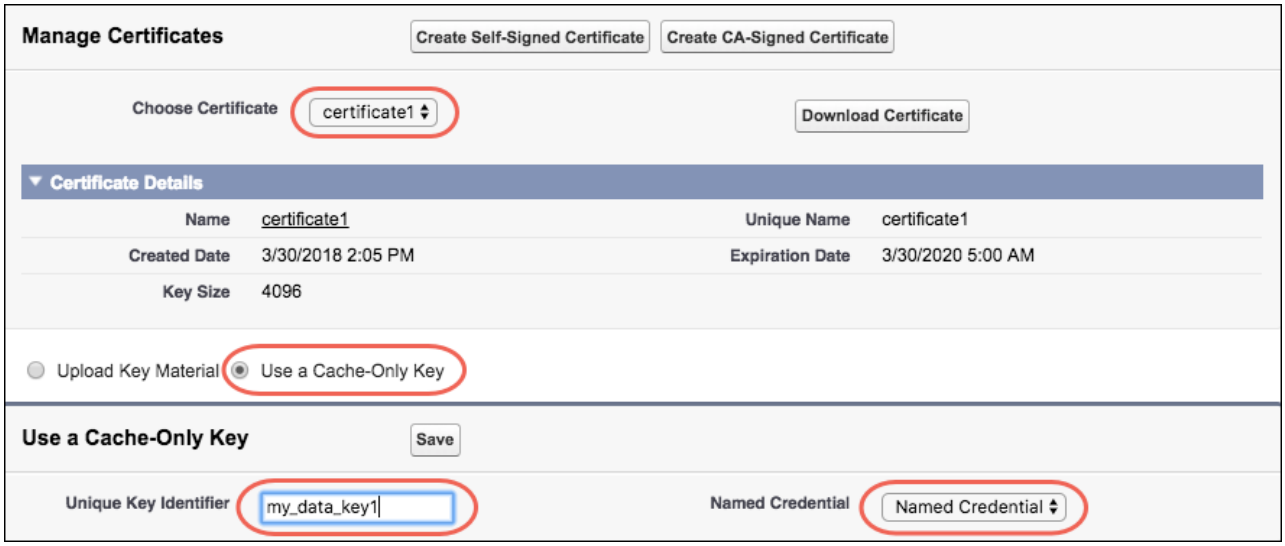
To create, edit, and delete named credentials:
- Customize Application

To allow cache-only keys with BYOK:
- Customize Application

  AND

  Manage Encryption Keys

To generate, destroy, export, import, upload, and configure tenant secrets and customer-supplied key material:
- Manage Encryption Keys



Salesforce checks the connection to the endpoint specified by the named credential. If Salesforce can reach the endpoint, the key specified for the Unique Key Identifier becomes the active key. All data marked for encryption by your encryption policy is encrypted with your cache-only key.

If Salesforce can't reach the specified endpoint, an error displays to help you troubleshoot the connection.

Cache-only key status is recorded as Fetched on the Key Management page. In Enterprise API, the TenantSecret `Source` value is listed as Remote.

Tip: You can monitor key configuration callouts in the Setup Audit Trail. When a callout to an active or archived cache-only key is successful, the Setup Audit Trail logs an Activated status. Individual callouts aren't monitored in Setup Audit Trail.

Add Replay Detection for Cache-Only Keys

Replay detection protects your cache-only keys if a callout is fraudulently intercepted. When enabled, replay detection inserts an autogenerated, unique marker called a RequestIdentifier into every callout. The RequestIdentifier includes the key identifier, a nonce generated for that callout instance, and the nonce required from the endpoint. The RequestIdentifier serves as a random, one-time identifier for each valid callout request. After you set up your key service to accept and return the RequestIdentifier, any callout with missing or mismatched RequestIdentifiers is aborted.

1. Update your key service to extract the nonce generated for the callout instance from the RequestIdentifier. Here's what the nonce looks like.

   ```
   e5ab58fd2ced013f2a46d5c8144dd439
   ```

2. Echo this nonce in the JWE protected header, along with the algorithm used to encrypt the content encryption key, the algorithm used to encrypt the data encryption key, and the unique ID of the cache-only key. Here's an example.

   ```
   {"alg":"RSA-OAEP","enc":"A256GCM","kid":"982c375b-f46b-4423-8c2d-4d1a69152a0b","jti":"e5ab58fd2ced013f2a46d5c8144dd439"}
   ```

3. From Setup, in the Quick Find box, enter `Encryption Settings`, and then click **Encryption Settings**.
4. In the Advanced Encryption Settings section, turn on **Enable Replay Detection for Cache-Only Keys**.

   You can also enable replay detection programmatically. For more information, see EncryptionKeySettings in the *Metadata API Developer Guide*.

   From now on, every callout to an external key service includes a unique RequestIdentifier.

Warning: If you enable replay detection but don't return the nonce with your cache-only key material, Salesforce aborts the callout connection and displays a POTENTIAL_REPLAY_ATTACK_DETECTED error.

EDITIONS

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption, and the Cache-Only Key Service.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To create, edit, and delete named credentials:
- Customize Application

To enable replay detection for cache-only keys:
- Customize Application

  AND

  Manage Encryption Keys

To generate, destroy, export, import, upload, and configure tenant secrets and customer-supplied key material:
- Manage Encryption Keys

Check Your Cache-Only Key Connection

Because your cache-only key material is stored outside of Salesforce, it's important to maintain a functional callout connection. Use the Callout Check page to monitor your connection and quickly respond to key service interruptions that could prevent the service from fetching your keys.

The Cache-Only Key: Callout Check page is accessible after you enable the Cache-Only Key Service in your org and make your first callout. Data presented as part of a callout check are never stored in the system of record.

1. From Setup, enter `Platform Encryption` in the Quick Find box, then select **Key Management**.
2. Choose the Certificate Unique Name and Named Credential associated with your Unique Key Identifier.
3. In the Actions column, next to the key material you want to check, click **Details**.
4. On the Cache-Only Key: Callout Check page, click **Check**.
   Details about your callout connection display on the page. It can take a few moments for the callout check to complete and display the results.

EDITIONS

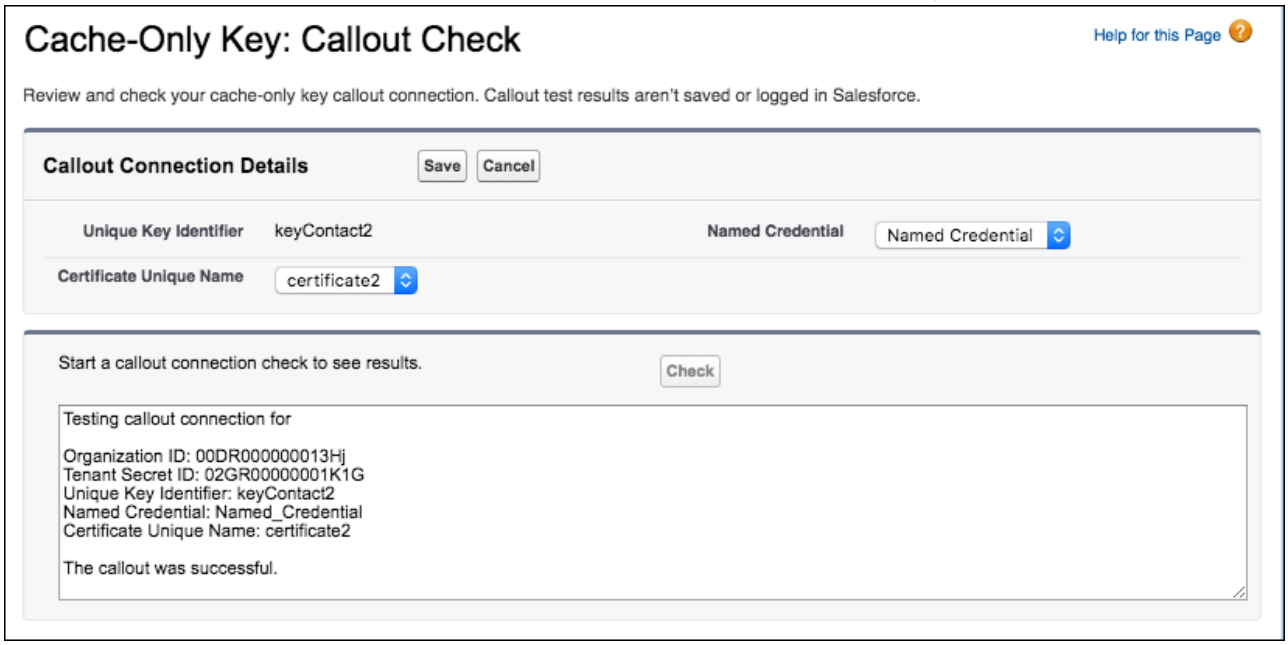
Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption, and the Cache-Only Key Service.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To generate, destroy, export, import, upload, and configure tenant secrets and customer-supplied key material:

- Manage Encryption Keys



5. Review the details about your callout connection. If your callout connection was unsuccessful, you see a descriptive error message at the bottom of the results pane. Use this message to make the appropriate adjustments to your key service.

Destroy a Cache-Only Key

When you destroy a cache-only key, you're destroying two things: the key in the cache and the callout connection to the key service.

1. From Setup, in the Quick Find box, enter `Platform Encryption`, and then select **Key Management**.
2. In the Key Management Table, select a key type.
3. Find your key in the table and click **Destroy**.
   Your key material's status is changed to Destroyed, and callouts to this key stop. Data encrypted with this key material is masked with "?????" in the app.

Note: Your cache-only key is unique to your org and to the specific data to which it applies. When you destroy a cache-only key, related data isn't accessible unless you reactivate it and make sure that Salesforce can fetch it.

EDITIONS

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption, and the Cache-Only Key Service.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To generate, destroy, export, import, upload, and configure tenant secrets and customer-supplied key material:

- Manage Encryption Keys

Reactivate a Cache-Only Key

If you still have your named credential associated with a key that was destroyed in Salesforce, you can reactivate a destroyed cache-only key from Setup or programmatically through the API. Reactivating a destroyed key makes it the active key. Before you reactivate a destroyed key, make sure that the corresponding key service connection is recovered.

1. From Setup, in the Quick Find box, enter `Platform Encryption`, and then select **Key Management**.
2. Find your key in the table and click **Activate**.
   The Shield Key Management Service fetches the reactivated cache-only key from your key service and uses it to access data that was previously encrypted with it.

   Note: You can sync your data to your active cache-only key just like you can with any other key material.

EDITIONS

Available in: **Enterprise**, **Performance**, **Unlimited**, and **Developer** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption, and the Cache-Only Key Service.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To generate, destroy, export, import, upload, and configure tenant secrets and customer-supplied key material:

- Manage Encryption Keys

Considerations for Cache-Only Keys

These considerations apply to all data that you encrypt using the Shield Platform Encryption Cache-Only Key Service.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

Retry Policy

If Salesforce can't reach your external key service, the callout fails and your active cache-only key's status is set to Destroyed. This policy prevents excessive loads on both services. The Cache-Only Key Service then periodically retries the callout to help you minimize down time. Retries occur one time per minute for five minutes, then one time every five minutes for 24 hours. If the Cache-Only Key Service can successfully complete a callout during this retry period, your cache-only key's status is reset to Active.

At any point during a retry period, you can activate your key material through Setup or the API pending remote key service availability. If you reactivate your key material during the retry period, all retry attempts stop.

The RemoteKeyCalloutEvent object captures every callout to your key service. You can subscribe to this event with after insert Apex triggers, and set up real-time alerts that notify you when a callout fails.

401 HTTP Responses

If there's a 401 HTTP response, Salesforce automatically refreshes any OAuth token associated with your named credential, and retries the request.

CRM Analytics

Backups of CRM Analytics data are encrypted with your Shield Platform Encryption keys. If you encrypt data in CRM Analytics datasets with a cache-only key, make sure that the Analytics cache-only key is in the same state as your Fields and Files (Probabilistic) cache-only key.

Setup Audit Trail

Setup Audit Trail records activated cache-only key versions differently depending on whether a cache-only key with the Active status exists when you reactivate the key.

However, if you reactivate a destroyed key and there's already another key with the Active status, the Setup Audit Trail shows the reactivated key with an updated version number.

Cache-Only Keys and Key Types

Use a separate cache-only key for each type of data you want to encrypt. You can't use a cache-only key with multiple key types. For example, you can't use a cache-only key to encrypt both search indexes and CRM Analytics data.

Service Protections

To protect against Shield KMS interruptions and ensure smooth encryption and decryption processes, you can have up to 10 active and archived cache-only keys of each type.

If you reach your key limit, destroy an existing key so that you can create, upload, reactivate, rearchive, or create a callout to another one. Remember to synchronize your data with an active key before destroying key material.

Troubleshoot Cache-Only Keys

One or more of these frequently asked questions may help you troubleshoot any problems that arise with Shield Platform Encryption's Cache-Only Key Service.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

The callout to my key service isn't going through. What can I do?

Callouts can fail for various reasons. Review the error message that displays and follow these tips for resolving the problem. All callouts are recorded in the RemoteKeyCalloutEvent object.

Table 3: Cache-Only Key Service Errors and Status Codes

RemoteKeyCalloutEvent Status Code	Error	Tips for Fixing the Problem
DESTROY_HTTP_CODE	The remote key service returned an HTTP error: {000}. A successful HTTP response returns a 200 code.	To find out what went wrong, review the HTTP response code.
ERROR_HTTP_CODE	The remote key service returned an unsupported HTTP response code: {000}. A successful HTTP response returns a 200 code.	To find out what went wrong, review the HTTP response code.
MALFORMED_CONTENT_ENCRYPTION_KEY	The remote key service returned a content encryption key in the JWE that couldn't be decrypted with the certificate's private key. Either the JWE is corrupted, or the content encryption key is encrypted with a different key.	Check that you set up your named credential properly and are using the correct BYOK-compatible certificate.
MALFORMED_DATA_ENCRYPTION_KEY	The content encryption key couldn't decrypt the data encryption key that was returned in the remote key service's JWE. The data encryption key is either malformed, or encrypted with a different content encryption key.	Check that you set up your named credential properly and are using the correct BYOK-compatible certificate. Named credentials must call out to an HTTPS endpoint.
MALFORMED_JSON_RESPONSE	We can't parse the JSON returned by your remote key service. Contact your remote key service for help.	Contact your remote key service.
MALFORMED_JWE_RESPONSE	The remote key service returned a malformed JWE token that can't be decoded.	Contact your remote key service.

RemoteKeyCalloutEvent Status Code	Error	Tips for Fixing the Problem
	Contact your remote key service for help.	
EMPTY_RESPONSE	The remote key service callout returned an empty response. Contact your remote key service for help.	Contact your remote key service.
RESPONSE_TIMEOUT	The remote key service callout took too long and timed out. Try again.	If your key service is unavailable after multiple callout attempts, contact your remote key service.
UNKNOWN_ERROR	The remote key service callout failed and returned an error: {000}.	Contact your remote key service.
INCORRECT_KEYID_IN_JSON	The remote key service returned JSON with an incorrect key ID. Expected: {valid keyID}. Actual: {invalid keyID}.	Check that you set up your named credential properly and are using the correct BYOK-compatible certificate.
INCORRECT_KEYID_IN_JWE_HEADER	The remote key service returned a JWE header with an incorrect key ID. Expected: {valid keyID}. Actual: {invalid keyID}.	Check that you set up your named credential properly and are using the correct BYOK-compatible certificate.
INCORRECT_ALGORITHM_IN_JWE_HEADER	The remote key service returned a JWE header that specified an unsupported algorithm (alg): {algorithm}.	The algorithm for encrypting the content encryption key in your JWE header must be in RSA-OAEP format.
INCORRECT_ENCRYPTION_ALGORITHM_IN_JWE_HEADER	The remote key service returned a JWE header that specified an unsupported encryption algorithm (enc): {your enc}.	The algorithm for encrypting the data encryption key in your JWE header must be in A256GCM format.
INCORRECT_DATA_ENCRYPTION_KEY_SIZE	Data encryption keys encoded in a JWE must be 32 bytes. Yours is {value} bytes.	Make sure that your data encryption key is 32 bytes.
ILLEGAL_PARAMETERS_IN_JWE_HEADER	Your JWE header must use {0}, but no others. Found: {1}.	Remove the unsupported parameters from your JWE header.
MISSING_PARAMETERS_IN_JWE_HEADER	Your JWE header is missing one or more parameters. Required: {0}. Found:{1}.	Make sure that your JWE header includes all required values. For example, if Replay Detection is enabled, the JWE header must include the nonce value extracted from the cache-only key callout.
AUTHENTICATION_FAILURE_RESPONSE	Authentication with the remote key service failed with the following error: {error}.	Check the authentication settings for your chosen named credential.
POTENTIAL_REPLAY_ATTACK_DETECTED	The remote key service returned a JWE header with an incorrect nonce value. Expected: {0}. Actual: {1}	Make sure that your JWE header includes the RequestID included in the callout.
UNKNOWN_ERROR	The remote key service callout failed and returned an error: java.security.cert.CertificateExpiredException: NotAfter: {date and time of expiration}	The certificate for your cache-only key expired. Update your cache-only key material to use an active BYOK-compatible certificate.

The following key service errors can prevent the callout from completing. If you see errors related to these problems, contact your key service administrator for help.

- The JWE is corrupt or malformed.
- The data encryption key is malformed.
- The key service returned a malformed JWE token.
- The key service returned an empty response.

For uniform resource use, Salesforce limits the amount of time for each key service callout to 3 seconds. If the callout takes more than the allotted time, Salesforce fails the callout with a timeout error. Check that your key service is available. Make sure that your named credential references the correct endpoint—check the URL, including the IP address.

Can I execute a remote callout in Apex?

Yes. Salesforce manages all authentication for Apex callouts that specify a named credential as the callout endpoint so that your code doesn't have to. To reference a named credential from a callout definition, use the named credential URL. A named credential URL contains the scheme callout, the name of the named credential, and an optional path. For example: callout:My_Named_Credential/some_path.

See Named Credentials as Callout Endpoints in the Apex Developer Guide.

Can I monitor my callout history?

If you want to review or track cache-only key events, use the RemoteKeyCalloutEvent standard object. Either use the `describeSObjects()` call to view event information, or an after insert Apex trigger to perform custom actions after each callout. For example, you can write a trigger that stores `RemoteKeyCallout` events in a custom object. When you store `RemoteKeyCallout` events in a custom object, you can monitor your callout history. See the RemoteKeyCalloutEvent entry in the *Salesforce Object Reference* for more information.

The Setup Audit Trail tracks changes in key material state and named credential settings. Callout history isn't recorded in log files.

When I try to access data encrypted with a cache-only key, I see "?????" instead of my data. Why?

Masking means one of two things. Either the connection to your key service is broken and we can't fetch your key, or the data is encrypted with a destroyed key. Check that your key service is available and that your named credential references the correct endpoint. If any key versions are marked as Destroyed as a result of a key service failure, recover the connection and manually activate the key version.

Do I have to make a new named credential every time I rotate a key?

Nope. You can use a named credential with multiple keys. As long as you host your key material at the endpoint specified in an existing named credential, you're all set. When you rotate your key material, change the key ID in the Unique Key Identifier field. Double-check that your new key is stored at the specified endpoint URL in your named credential.

I'm still having problems with my key. Who should I talk to?

If you still have questions, contact your account executive or Salesforce Customer Support. They'll put you in touch with a support team specific to this feature.

Shield Platform Encryption Customizations

Some features and settings require adjustment before they work with encrypted data.

IN THIS SECTION:

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

Apply Encryption to Fields Used in Matching Rules

Matching rules used in duplicate management help you maintain clean and accurate data. To make fields encrypted with Shield Platform Encryption compatible with standard and custom matching rules, use the deterministic encryption scheme.

Before you start, turn on **Deterministic Encryption** from the Encryption Settings page. If you don't have a Fields (Deterministic) type tenant secret, create one from the Key Management page.

Important: Matching rules used in duplicate management don't support probabilistically encrypted data.

Follow these steps to add encrypted fields to existing custom matching rules.

1. From Setup, in the Quick Find box, enter `Matching Rules`, and then select **Matching Rules**.
2. Deactivate the matching rule that reference fields that you want to encrypt. If your matching rule is associated with an active duplicate rule, first deactivate the duplicate rule from the Duplicate Rules page. Then return to the Matching Rules page and deactivate the matching rule.
3. From Setup, in the Quick Find box, enter `Encryption Settings`, and then select **Encryption Settings**.
4. In the Advanced Encryption Settings section, click **Select Fields**.
5. Click **Edit**.
6. Select the fields that you want to encrypt, and select **Deterministic** from the Encryption Scheme list.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

USER PERMISSIONS

To view setup:
- View Setup and Configuration

To enable encryption key (tenant secret) management:
- Manage Profiles and Permission Sets

7. Save your work.

   Tip: Standard matching rules are automatically deactivated when encryption is added to a field referenced by that rule. To encrypt fields referenced in standard matching rules, follow steps 3–8.

8. After you get the email verifying encryption's been enabled on your fields, reactivate your matching rule and associated duplicate management rule.
   Matching rules used in duplicate management now return exact and fuzzy matches on encrypted data.

Example: Let's say that you encrypted the Billing Address on your Contacts, and you want to add this field to a custom matching rule. First, deactivate the rule or rules that you want to add this field to. Make sure that the Billing Address field is encrypted with the deterministic encryption scheme. Then add Billing Address to your custom matching rule, just like how you add any other field. Finally, reactivate your rule.

When you rotate your key material, you must update custom matching rules that reference encrypted fields. After you rotate your key material, deactivate and then reactivate the affected matching rules. Then contact Salesforce to request the background encryption process. When the background encryption process finishes, your matching rules can access all data encrypted with your active key material.

Important: To ensure accurate matching results, customers who used the beta version of this feature must deactivate any matching rules that reference encrypted fields and then reactivate them. If your custom matching rule fails on reactivation, contact Salesforce for help with reactivating your match index.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Use Encrypted Data in Formulas

Use custom formula fields to quickly find encrypted data. Shield Platform Encryption is compatible with several operators and functions, and can render encrypted data in text, date, and date/time formats, and reference quick actions.

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.
Available in Salesforce Classic.

Note: Formula fields that reference encrypted data are supported only in Salesforce Classic. They aren't supported in Lightning Experience or via SOQL. If you work exclusively in Lightning Experience or have dependencies on formula fields that require Lightning Experience, we recommend that you don't reference encrypted fields in formulas. The following examples apply to Salesforce Classic.

Supported Operators, Functions, and Actions

Supported operators and functions:

- `&` and + (concatenate)
- `BLANKVALUE`
- `CASE`
- `HYPERLINK`
- `IF`
- `IMAGE`
- `ISBLANK`
- `ISNULL`
- `NULLVALUE`

Also supported:

- Spanning
- Quick actions

Formulas can return data only in `text`, `date`, or `date/time` formats.

& and + (Concatenate)

This works:	`(encryptedField__c & encryptedField__c)`
Why it works:	This formula works because `&` is supported.
This doesn't work:	`LOWER(encryptedField__c & encryptedField__c)`
Why it doesn't work:	`LOWER` isn't a supported function, and the input is an encrypted value.

Case

`CASE` returns encrypted field values, but doesn't compare them.

This works:	`CASE(custom_field__c, "1", cf2__c, cf3__c))` where either or both `cf2__c` and `cf3__c` are encrypted
Why it works:	`custom_field__c` is compared to "1". If it's true, the formula returns `cf2__c` because it's not comparing two encrypted values.
This doesn't work:	`CASE("1", cf1__c, cf2__c, cf3__c)` where `cf1__c` is encrypted
Why it doesn't work:	You can't compare encrypted values.

`ISBLANK` and `ISNULL`

This works:	`OR(ISBLANK(encryptedField__c), ISNULL(encryptedField__c))`
Why it works:	Both `ISBLANK` and `ISNULL` are supported. `OR` works in this example because `ISBLANK` and `ISNULL` return a Boolean value, not an encrypted value.

Spanning

This works:	`(LookupObject1__r.City & LookupObject1__r.Street) & (LookupObject2__r.City & LookupObject2__r.Street) & (LookupObject3__r.City & LookupObject3__r.Street) & (LookupObject4__r.City & LookupObject4__r.Street)`
How and why you use it:	Spanning retrieves encrypted data from multiple entities. For example, let's say you work in the customer service department for Universal Containers. A customer has filed a case about a distribution problem, and you want to see the scope of the issue. You want all the shipping addresses related to this particular case. This example returns all the customers' shipping addresses as a single string in your case layout.

Validation

The encryption validation service checks your org to make sure that it's compatible with encrypted formula field types.

When you encrypt a given field, the validation service:

- Retrieves all formula fields that reference the field
- Verifies that the formula fields are compatible with encryption
- Verifies that the formula fields aren't used elsewhere for filtering or sorting

Limits

Up to 200 formula fields can reference a given encrypted custom field. A field that is referenced by more than 200 formula fields can't be encrypted. If you must reference an encrypted custom field from more than 200 formula fields, contact Salesforce.

When you specify multiple fields to encrypt at one time, the 200-field limit is applied to the whole batch. If you know that you're encrypting fields that have multiple formula fields pointing to them, encrypt those fields one at a time.

Tradeoffs and Limitations of Shield Platform Encryption

A security solution as powerful as Shield Platform Encryption doesn't come without some tradeoffs. When your data is encrypted, some users may see limitations to some functionality, and a few features aren't available at all. Consider the impact on your users and your overall business solution as you design your encryption strategy.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

IN THIS SECTION:

Shield Platform Encryption Best Practices

Take the time to identify the most likely threats to your org. This process helps you distinguish data that needs encryption from data that doesn't, so that you can encrypt only what you need to. Make sure that your tenant secret and keys are backed up, and be careful who you allow to manage your secrets and keys.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

1. Define a threat model for your organization.

   To identify the threats that are most likely to affect your organization, walk through a formal threat modeling exercise. Use your findings to create a data classification scheme, which can help you decide what data to encrypt.

2. Encrypt only where necessary.

   - Not all data is sensitive. Focus on information that requires encryption to meet your regulatory, security, compliance, and privacy requirements. Unnecessarily encrypting data impacts functionality and performance.

- Evaluate your data classification scheme early and work with stakeholders in security, compliance, and business IT departments to define requirements. Balance business-critical functionality against security and risk measures and challenge your assumptions periodically.

3. Create a strategy early for backing up and archiving keys and data.

   If your tenant secrets are destroyed, reimport them to access your data. You are solely responsible for making sure that your data and tenant secrets are backed up and stored in a safe place. Salesforce cannot help you with deleted, destroyed, or misplaced tenant secrets.

4. Read the Shield Platform Encryption considerations and understand their implications on your organization.
   - Evaluate the impact of the considerations on your business solution and implementation.
   - Test Shield Platform Encryption in a sandbox environment before deploying to a production environment. Encryption policy settings can be deployed using change sets.
   - Before enabling encryption, fix any violations that you uncover. For example, if you reference encrypted fields in a SOQL ORDER BY clause, a violation occurs. Fix the violation by removing references to the encrypted fields.
   - When requesting feature enablement, such as pilot features, give Salesforce Customer Support several days lead time. The time to complete the process varies based on the feature and how your org is configured.

5. Analyze and test AppExchange apps before deploying them.
   - If you use an app from the AppExchange, test how it interacts with encrypted data in your organization and evaluate whether its functionality is affected.
   - If an app interacts with encrypted data that's stored outside of Salesforce, investigate how and where data processing occurs and how information is protected.
   - If you suspect Shield Platform Encryption could affect the functionality of an app, ask the provider for help with evaluation. Also discuss any custom solutions that must be compatible with Shield Platform Encryption.
   - Apps on the AppExchange that are built exclusively using Lightning Platform inherit Shield Platform Encryption capabilities and limitations.

6. Use out-of-the-box security tools.

   Shield Platform Encryption is not a user authentication or authorization tool. To control which users can see which data, use out-of-the-box tools such as field-level security settings, page layout settings, and sharing rules, rather than Shield Platform Encryption.

7. Grant the Manage Encryption Keys user permission to authorized users only.

   Users with the Manage Encryption Keys permission can generate, export, import, and destroy organization-specific keys. Monitor the key management activities of these users regularly with the setup audit trail.

8. Synchronize your existing data with your active key material.

   Existing field and file data is not automatically encrypted when you turn on Shield Platform Encryption. To encrypt existing field data, update the records associated with the field data. This action triggers encryption for these records so that your existing data is encrypted at rest. To encrypt existing files or get help updating other encrypted data, contact Salesforce. We can encrypt existing file data in the background to ensure data alignment with the latest encryption policy and key material.

   When you contact Salesforce support to request the background encryption service, allow at least a week before you need the background encryption completed. The time to complete the process varies based on the volume of data involved. It could take several days.

9. Handle currency and number data with care.

Currency and Number fields can't be encrypted because they could have broad functional consequences across the platform, such as disruptions to roll-up summary reports, report timeframes, and calculations. You can often keep private, sensitive, or regulated data of this variety safe in other encryption-supported field types.

10. Communicate to your users about the impact of encryption.

    Before you enable Shield Platform Encryption in a production environment, inform users about how it affects your business solution. For example, share the information described in Shield Platform Encryption considerations, where it's relevant to your business processes.

11. Encrypt your data using the most current key.

    When you generate a new tenant secret, any new data is encrypted using this key. However, existing sensitive data remains encrypted using previous keys. In this situation, Salesforce strongly recommends re-encrypting these fields using the latest key. Contact Salesforce for help with re-encrypting your data.

12. Use discretion when granting login as access to users or Salesforce Customer Support.

    If you grant login access to a user, and they have field level security access to an encrypted field, that user is able to view encrypted data in that field in plaintext.

    If you want Salesforce Customer Support to follow specific processes around asking for or using login as access, you can create special handling instructions. Salesforce Customer Support follows these instructions in situations where login as access may help them resolve your case. To set up these special handling instructions, contact your account executive.

General Shield Platform Encryption Considerations

These considerations apply to all data that you encrypt using Shield Platform Encryption.

Important: Where possible, we changed noninclusive terms to align with our company value of Equality. We maintained certain terms to avoid any effect on customer implementations.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

Leads

Lead and Case assignment rules, workflow rules, and validation rules work normally when Lead fields are encrypted. Matching and de-duplication of records during lead import works with deterministic encryption but not probabilistic encryption. Einstein Lead Scoring isn't available.

Apex Lead Conversion works normally, but PL-SQL-based lead conversion isn't supported.

User Email

Many Salesforce features rely on the User Email field. Most work seamlessly with Shield Platform Encryption. But the following products and features behave differently when User Email is encrypted.

- User Email is unencrypted when Lightning Sync or Einstein Activity Capture are enabled. Lightning Sync and Einstein Activity Capture duplicate the User Email field in the database when users are added to sync configurations for those products. Even if you encrypt the User Email field with Shield Platform Encryption, this duplicate field stores user emails in the Salesforce database in an unencrypted state. For more information, see Considerations for Syncing Contacts, Considerations for Syncing Events, and Considerations for Setting Up Einstein Activity Capture.
- Event functionality that relies on user emails, especially calendar invitations, can be interrupted. Before encrypting the User Email field in production environments, Salesforce recommends that you test Activity features in a sandbox.

- You can't sort records in list views by fields that contain encrypted data. If you encrypt User email, you can't add it as a filter in reports.
- Login Discovery Handler lookups that rely on emails don't work if the email field is encrypted, which can block user logins. If your lookups rely on emails, don't encrypt the User Email field.
- If you use Einstein Conversation Insights, encrypt User Email with case-insensitive deterministic encryption. Some Einstein Conversation Insights features, including video calls, don't work when User Email is encrypted with probabilistic encryption.

Flows and Processes

You can reference encrypted fields in most places in your flows and processes. However, you can't reference encrypted fields in these filtering or sorting contexts.

Tool	Filtering Availability	Sorting Availability
Process Builder	Update Records action	n/a
Flow Builder	Record Choice Set resource Get Records element Delete Records element Update Records element Condition requirements	Record Choice Set resource Get Records element

You can store the value from an encrypted field in a variable and operate on that value in your flow's logic. You can also update the value for an encrypted field.

Paused flow interviews can cause data to be saved in an unencrypted state. When a flow or process is waiting to resume, the associated flow interview is serialized and saved to the database. The flow interview is serialized and saved when:

- Users pause a flow
- Flows execute a Wait element
- Processes are waiting to execute scheduled actions

If the flow or process loads encrypted fields into a variable during these processes, that data isn't always encrypted at rest.

Next Best Action Recommendations

When you use probabilistic encryption, you can't use encrypted fields like Recommendation Description when you specify conditions to load recommendations.

Custom Fields

You can't use encrypted custom fields in criteria-based sharing rules.

Some custom fields can't be encrypted.

- Fields that have the `Unique` or `External ID` attributes or include these attributes on previously encrypted custom fields (applies only to fields that use the probabilistic encryption scheme)
- Fields on external data objects
- Fields that are used in an account contact relation

You can't use Schema Builder to create an encrypted custom field.

You can't use Shield Platform Encryption with Custom Metadata Types.

SOQL and SOSL

- You can't include fields encrypted with the probabilistic encryption scheme in the following SOQL and SOSL clauses and functions:
  - Aggregate functions such as MAX(), MIN(), and COUNT_DISTINCT()
  - WHERE clause
  - GROUP BY clause
  - ORDER BY clause

  For information about SOQL and SOSL compatibility with deterministic encryption, see Considerations for Using Deterministic Encryption in Salesforce Help.

  Tip: Consider whether you can replace a WHERE clause in a SOQL query with a FIND query in SOSL.

- When you query encrypted data, invalid strings return an `INVALID_FIELD` error instead of the expected `MALFORMED_QUERY`.

Marketing Cloud Account Engagement

Account Engagement supports contact email addresses encrypted by Shield Platform Encryption as long as your instance meets a few conditions. Your org must allow multiple prospects with the same email address. After this feature is enabled, you can add the contact email address field to your encryption policy.

Because the contact email address shows in the Permission object, users must have permission to view the Prospect object.

If you encrypt the contact email address field, the Salesforce Connector can't use the email address as a secondary prospect match criteria. For more information, read Salesforce Connector Settings.

Portals

If a legacy portal (created before 2013) is enabled in your org, you can't encrypt standard fields. Deactivate all legacy customer and partner portals to enable encryption on standard fields. (Salesforce Experience Cloud sites are supported.)

To deactivate a legacy customer portal, go to the Customer Portal Settings page in Setup. To deactivate a legacy partner portal, go to the Partners page in Setup.

Salesforce B2B Commerce

Shield Platform Encryption supports version 4.10 and later of the Salesforce B2B Commerce managed package, with some behavior differences. For a complete list of considerations, see Enable Shield Platform Encryption for B2B Commerce for Visualforce Objects.

Search

If you encrypt fields with a key and then destroy the key, the corresponding search terms remain in the search index. However, you can't decrypt the data associated with the destroyed key.

Accounts, Person Accounts, and Contacts

When Person Accounts are turned on, encrypting any of the following Account fields encrypts the equivalent Contact fields, and vice versa.

- Name
- Description
- Phone
- Fax

When you encrypt any of the following Account or Contact fields, the equivalent fields in Person Accounts are also encrypted.

- Name
- Description
- Mailing Address
- Phone
- Fax
- Mobile
- Home Phone
- Other Phone
- Email

When the Account Name or Contact Name field is encrypted, searching for duplicate accounts or contacts to merge doesn't return any results.

When you encrypt the First Name or Last Name field on a contact, that contact appears in the Calendar Invite lookup only if you haven't filtered by First Name or Last Name.

Email Bounce Handling

Bounce handling doesn't support encrypted email addresses. If you need email bounce handling, don't encrypt the standard Email field.

Email-to-Case

Copying text from email fields also copies unicode characters embedded in email text. Two of those unicode character sequences, `\uFFFE` and `\uFFFF`, can't be included in text encrypted by Shield Platform Encryption. If you encounter an error mentioning these unicode sequences, delete the text copied from the email field and type it manually.

Activity Subject and Description

You can encrypt an Activity Subject field with case-insensitive encryption. If you destroy key material that encrypts a field, filtering on the field doesn't yield matches.

If you encrypt the Activity Subject field and it's used in a custom picklist, delete and replace actions aren't available for that value. To remove an Activity Subject value from a picklist, deactivate it.

Activity Subject fields that include an OrgID aren't copied over when you create a sandbox copy of a production org.

Encrypting Activity Description also encrypts the Task Comment field. The validation email lists the Task Comment field but not Activity Description, even though both fields are encrypted.

Salesforce for Outlook

If you encrypt the same fields that you filter in Salesforce for Outlook data sets, Salesforce for Outlook doesn't sync. To get Salesforce for Outlook to sync again, remove the encrypted fields from your filters in your data sets.

Campaigns

Campaign member search isn't supported when you search by encrypted fields.

Notes

You can encrypt the body text of Notes created with the new Notes tool. However, the Preview file and Notes created with the old Notes tool aren't supported.

Field Audit Trail

Data in a previously archived Field Audit Trail isn't encrypted when you turn on Platform Encryption. For example, say that your org uses Field Audit Trail to define a data history retention policy for an account field, such as the phone number field. When you turn on encryption for that field, new phone number records are encrypted as they're created. Previous updates to the phone number field that are stored in the Account History related list are also encrypted. However, phone number history data that is already archived in the `FieldHistoryArchive` object is stored without encryption. To encrypt previously archived data, contact Salesforce.

Salesforce Experiences

If you encrypt the Account Name field and you're not using Person Accounts, encryption affects how users' roles are displayed to admins. Normally, a site user's role name is displayed as a combination of their account name and the name of their user profile. When you encrypt the Account Name field, the account ID is displayed instead of the account name.

For example, when the Account Name field isn't encrypted, users belonging to the Acme account with the Customer User profile would have a role called `Acme Customer User`. When Account Name is encrypted (and Person Accounts aren't in use), the role is displayed as something like `001D000000IRt53 Customer User`.

Data Import Wizard

You can't use the Data Import Wizard to perform matching using master-detail relationships or update records that contain fields that use the probabilistic encryption scheme. You can use it to add new records, however.

Reports, Dashboards, and List Views

- Report charts and dashboard components that display encrypted field values might be cached unencrypted.
- You can't sort records in list views by fields that contain encrypted data.

Encryption for Chatter

When you embed a custom component in your Chatter feed using Rich Publisher Add-Ons, the data related to those add-ons is encoded, but it isn't encrypted with the Shield Platform Encryption service. Unencrypted data in Rich Publisher Add-Ons includes data stored in the Extension ID, Text Representation, Thumbnail URL, Title, Payload, and PayloadVersion fields.

Encryption for Custom Matching Rules Used in Duplicate Management

Custom matching rules can only reference fields encrypted with the deterministic encryption scheme. Probabilistic encryption isn't supported. When you rotate your keys, you must deactivate and then reactivate custom matching rules that reference encrypted fields. If you don't take this step after updating your key material, matching rules don't find all your encrypted data.

Standard matching rules that include fields with Shield Platform Encryption don't detect duplicates. If you encrypt a field included in standard matching rules, deactivate the standard rule.

Service protections ensure that loads are balanced across the system. The matching service searches for match candidates until it finds all matches up to 200 matches. With Shield Platform Encryption, the service search maximum is 100 candidates. With encryption, you could find fewer or no possible duplicate records.

Duplicate jobs aren't supported.

Self-Service Background Encryption

Self-service background encryption can encrypt data once every 7 days. This limit includes synchronization processes initiated from the Encryption Statistics and Data Sync page, synchronization that automatically runs when you disable encryption on a field, and synchronization completed by Salesforce Customer Support at your request.

Some conditions prevent the self-service background encryption from running:

- There are more than 10 million records in an object
- The org has destroyed key material
- An object's data is already synchronized
- The synchronization process is already running, initiated either by the customer or by Salesforce Customer Support at the customer's request
- Statistics are being gathered
- An encryption policy change is being processed, such as enabling encryption on a field or data element

After you begin the synchronization processes, wait until it finishes before changing your encryption policy or generating, uploading, or deleting key material. These actions abort the synchronization process.

Employees

If the email field is encrypted using probabilistic encryption, wellness check surveys can't be used. Deterministic encryption is fully supported.

Messaging End User

Encrypting fields on the Messaging End User object sometimes affects indexing. If you see performance degradation on these fields, manually create custom indexes on the affected fields after enabling encryption.

General

- Encrypted fields can't be used in:
  - Criteria-based sharing rules
  - Similar opportunities searches
  - External lookup relationships

- Fields encrypted with the probabilistic encryption scheme can't be used in filter criteria for data management tools. For considerations specific to filter-preserving deterministic encryption, read Considerations for Using Deterministic Encryption .
- Web-to-Case is supported, but the Web Company, Web Email, Web Name, and Web Phone fields aren't encrypted at rest.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Considerations for Using Deterministic Encryption

These considerations apply to data encrypted with Shield Platform Encryption's deterministic encryption scheme. Some considerations manifest differently depending on whether data is encrypted with the case-sensitive or case-insensitive deterministic encryption scheme.

Key Rotation and Filter Availability

When you rotate key material or change a field's encryption scheme to case-sensitive deterministic encryption or case-insensitive deterministic encryption, synchronize your data. Syncing applies the active Fields (Deterministic) key material to existing and new data. If you don't sync your data, filtering and queries on fields with unique attributes don't return accurate results.

You can sync most data yourself from the Encryption Statistics and Data Sync page in Setup. See Synchronize Your Data Encryption with the Background Encryption Service.

Available Fields and Other Data

Deterministic encryption is available for custom URL, email, phone, text, and text area field types. It isn't available for the following types of data:

- Custom date, date/time, long text area, rich text area, or description field types
- Chatter
- Files and attachments

Filter Operators

In reports and list views, the operators "equals" and "not equal to" are supported with case-sensitive deterministic encryption. Other operators, like "contains" or "starts with," don't return an exact match and aren't supported. Features that rely on unsupported operators, such as Refine By filters, also aren't supported.

Case-insensitive deterministic encryption supports list views and reports. However, the user interface displays all operators, including operators that aren't supported for encrypted data. To review the list of supported operators available in Salesforce Classic, see Use Encrypted Data in Formulas.

Formulas

Fields encrypted with the deterministic encryption scheme can't be referenced in SOQL WHERE queries.

Case Sensitivity

When you use case-sensitive deterministic encryption, case matters. In reports, list views, and SOQL queries on encrypted fields, the results are case-sensitive. Therefore, a SOQL query against the Contact object, where LastName = Jones, returns only Jones, not jones or JONES. Similarly, when the case-sensitive deterministic scheme tests for unicity (uniqueness), each version of "Jones" is unique.

Custom Field Allocations

To allow case-insensitive queries, Salesforce stores a lowercase duplicate of your data as a custom field in the database. These duplicates are necessary to enable case-insensitive queries, but they count against your total custom field count.

API Options to Identify Filterable Fields

Fields encrypted using the deterministic encryption scheme are filterable. You can use the `isFilterable()` method to determine the encryption scheme of a particular encrypted field. If the field is filterable, the method returns true.

However, you can't explicitly detect or set the deterministic encryption scheme via the API.

External ID

Case-insensitive deterministic encryption supports Text and Email external ID custom fields but not other external ID custom fields. When you create or edit these fields, use one of the following field setting combinations.

External ID Field Type	Unique Attributes	Encrypted
Text	None	Use case-insensitive deterministic encryption
Text	Unique and case sensitive	Use case-sensitive deterministic encryption
Text	Unique and case insensitive	Use case-insensitive deterministic encryption
Email	None	Use case-insensitive deterministic encryption
Email	Unique	Use case-sensitive deterministic encryption

You can't save changes to both Unique - Case-Sensitive and Encrypted options at the same time. Change one setting, save it, then change the next.

Compound Fields

Even with deterministic encryption, some kinds of searches don't work when data is encrypted with case-sensitive deterministic encryption. Concatenated values, such as compound names, aren't the same as the separate values. For example, the ciphertext for the compound name "William Jones" isn't the same as the concatenation of the ciphertexts for "William" and "Jones".

So, if the First Name and Last Name fields are encrypted in the Contacts object, this query doesn't work:

```
Select Id from Contact Where Name = 'William Jones'
```

But this query does work:

```
Select Id from Contact Where FirstName = 'William' And LastName ='Jones'
```

Case-sensitive and case-insensitive deterministic encryption schemes support compound fields, but only with individual column queries.

Filter Records by Strings

You can search for records using strings. However, commas in strings act as OR statements. If your string includes a comma, use quotation marks around the string. For example, a search for `"Universal Containers, Inc, Berlin"` returns records that include the full string, including the comma. Searches for `Universal Containers, Inc, Berlin` returns records that include "Universal Containers" or "Inc" or "Berlin".

SOQL GROUP BY Statements

You can use most of the SOQL statements with deterministic encryption. One exception is GROUP BY, which isn't supported, even though you can group report results by row or column.

SOQL LIKE and STARTS WITH Statements

Deterministic encryption only supports exact, case-sensitive matches. Comparison operators that return partial matches aren't supported. For example, LIKE and STARTS WITH statements aren't supported.

SOQL ORDER BY Statements

Because deterministic encryption doesn't maintain the sort order of encrypted data in the database, ORDER BY isn't supported.

Indexes

Case-sensitive deterministic encryption supports single-column indexes, single-column case-sensitive unique indexes, two-column indexes, and custom indexes on standard and custom fields.

Case-insensitive deterministic encryption offers limited support for standard indexes on the following standard fields.

- Contact—Email
- Email Message—Relation
- Lead—Email
- Name

Queries against these fields, when encrypted with case-insensitive deterministic encryption, can perform poorly with large tables. For optimal query performance, use custom indexes instead of standard indexes. To set up custom indexes, contact Salesforce Customer Support.

Expect the enablement process to take longer when you apply deterministic encryption to a field with a large number of records. To support filtering, the enablement process also rebuilds field indexes.

Next Best Action Recommendations

When you use deterministic encryption, you can use encrypted fields in load conditions only with the equals or not equals operator.

Chat

For the best possible recommendation results, use the case-sensitive deterministic encryption scheme with the Utterance field on the Utterance Suggestion object. This field doesn't support other encryption schemes at this time.

The Actor Name field on the Conversation Entry object supports case-sensitive deterministic encryption, but not case-insensitive deterministic encryption.

Converting Account and Contact Records to Person Accounts

When you convert account and contact records to Person Accounts, synchronize your data. Syncing resets the indexes that allow case-insensitive filtering.

Shield Platform Encryption and the Lightning Experience

Shield Platform Encryption works the same way in the Lightning Experience as it does in Salesforce Classic, with a few minor exceptions.

Notes

Note previews in Lightning are not encrypted.

File Encryption Icon

The icon that indicates that a file is encrypted doesn't appear in Lightning.

EDITIONS

Available as an add-on subscription in: **Enterprise**, **Performance**, and **Unlimited** Editions. Requires purchasing Salesforce Shield or Shield Platform Encryption. Available in **Developer** Edition at no charge.

Available in both Salesforce Classic and Lightning Experience.

Field Limits with Shield Platform Encryption

Under certain conditions, encrypting a field can impose limits on the values that you store in that field. If you expect users to enter non-ASCII values, such as Chinese, Japanese, or Korean-encoded data, we recommend creating validation rules to enforce these field limits.

	API Length	Byte Length	Non-ASCII Characters
Assistant Name (Contact)	40	120	22
Address (To, CC, BCC on Email Message) (when encrypted with probabilistic or case-sensitive deterministic encryption)	2959	4000	1333
City (Account, Contact, Lead)	40	120	22
Email (Contact, Lead)	80	240	70
Fax (Account)	40	120	22
First Name (Account, Contact, Lead)	40	120	22
Last Name (Contact, Lead)	80	240	70
Middle Name (Account, Contact, Lead)	40	120	22
Name (Custom Object)	80	240	70
Name (Opportunity)	120	360	110

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	API Length	Byte Length	Non-ASCII Characters
Phone (Account, Contact)	40	120	22
Site (Account)	80	240	70
Subject (Email Message)(when encrypted with probabilistic or case-sensitive deterministic encryption)	2207	3000	1000
Title (Contact, Lead)	128	384	126

Note: This list isn't exhaustive. For information about a field not shown here, refer to the API.

Email Message Fields and Case-Insensitive Encryption

To encrypt Address and Subject fields on the Email Message object with case-insensitive deterministic encryption, apply the scheme before you enter data into these fields. If existing data in these fields exceeds the following limits, that data isn't encrypted with case-insensitive deterministic encryption.

- API length: 527
- Byte length: 765
- Non-ASCII characters: 262

Case Comment Object

The Body field on the Case Comment object has a limit of 4,000 ASCII characters (or 4,000 bytes). However, when these fields are encrypted, the character limit is lower. How much lower depends on the kind of characters you enter.

- ASCII: 2959
- Chinese, Japanese, Korean: 1333
- Other non-ASCII: 1479

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?

Which Salesforce Apps Don't Support Shield Platform Encryption?

Some Salesforce features work as expected when you work with data that's encrypted with Shield Platform Encryption. Others don't.

These apps don't support data encrypted with Shield Platform Encryption.

- Connect Offline
- Commerce Cloud (Salesforce B2B Commerce version 4.10 and later is supported)
- Einstein Recommendation Engine in Marketing Cloud (includes Einstein Recommendations, Einstein Web Recommendations, and Einstein Email Recommendations)
- Salesforce Einstein (includes Einstein Search, Sales Cloud Einstein, Einstein Discovery, Einstein Builders, and Einstein Vision and Language)
- Heroku (but Heroku Connect does support encrypted data)
- Marketing Cloud (but Marketing Cloud Connect does support encrypted data)
- Sales productivity features that require data to be stored using a public cloud provider
- Social Customer Service
- Thunder
- Quip
- Salesforce Billing

EDITIONS

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Available in both Salesforce Classic and Lightning Experience.

Legacy portals (customer, self-service, and partner) don't support data encrypted with Shield Platform Encryption. If legacy portals are active, Shield Platform Encryption can't be enabled.

Note: This page is about Shield Platform Encryption, not Classic Encryption. What's the difference?