Cloud Certificate Manager

Private Certificate Authority (PCA) User Guide

Issue 14

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Contents

1 Overview of Private Certificate Application

Private Certificate Authority (PCA) is a private CA and certificate management platform. It allows you to set up a complete CA hierarchy and use it to issue and manage private certificates within an organization through simple and visualized operations. It is used to authenticate application identities and encrypt and decrypt data within an organization.

Certificates issued by private CAs are trusted only within your organization but not trusted on the Internet. To use a certificate that is trusted on the Internet, purchase an SSL certificate. For details, see **Purchasing an SSL Certificate**.

For details, see **Figure 1-1** and **Table 1-1**.

Figure 1-1 Private certificate application procedure

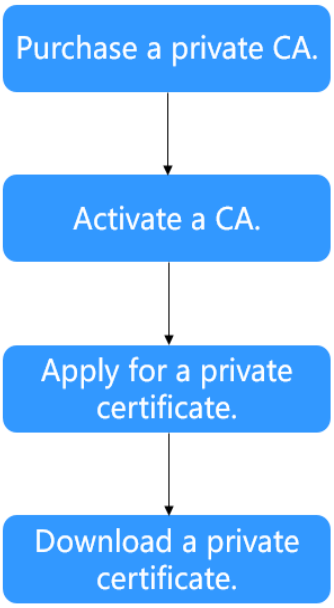

Purchase a private CA.
Activate a CA.
Apply for a private certificate.
Download a private certificate.

Table 1-1 Application procedure

Step	Operation	Description
1	**Purchasing a Private CA**	Purchase a private CA as required.
2	**Activating a Private CA**	A private CA instance must be activated before it is used to issue certificates. You can activate the purchased private CA instance as the **root CA** or **subordinate CA**. A subordinate private CA takes effect and can be used to issue private certificates only after it is activated.
3	**Applying for a Private Certificate**	Apply for a private certificate with the activated private CA.
4	**Downloading a Private Certificate**	After the application is approved, you can download the private certificate and install it on the server.

2 Private CA Management

2.1 Purchasing a Private CA

Huawei Cloud CCM provides you with the PCA service, which helps you set up an internal CA for your organization with low costs and use it to issue certificates with ease.

This topic describes how to purchase a private CA on the CCM console.

Background

- A maximum of 100 CAs can be created for each user.
- Private CAs in the pending deletion state are also counted in the private CA quota until the private CAs are deleted.

Prerequisites

The account for creating a private CA has the **PCA FullAccess** permission. For details, see **Permissions Management**.

Procedure

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. In the navigation pane on the left, choose **Private Certificate Management** > **Private Certificate**. The **Private Certificate** page is displayed.

Step 3 In the upper right corner of the private CA list, click **Buy Private CA**. The page is displayed.

Step 4 On the page, set the quota specifications. The following table **Table 2-1** describes the parameters.

Table 2-1 Parameters

Parameter	Description
Billing	Currently, the private CA supports only the **Yearly/ Monthly** billing mode.
Service Type	Set the **Type** to **Private CAs**.
Region	PCA is available in all regions. You do not need to select an AZ.
Key Algorithm	The international algorithm RSA and ECC are supported.
Required Duration	Select a duration based on your service requirements. You are advised to select **Auto-renewal** to prevent your services from being affected by service expiration.
Quantity	Enter the number of private CAs to be purchased based on your requirements.
Tags (Optional)	Add a tag to the private CA that you have purchased. For details, see **Creating a Tag**.

Step 5 After setting the parameters, click **Next** in the lower right corner.

Step 6 Confirm the order information and agree to the CCM statement by selecting **I have read and agree to the Cloud Certificate Manager (CCM) Statement**.

Step 7 Click **Pay** and complete the payment.

NOTICE

The service duration will be calculated after the payment. Please go to the console to activate the CA as soon as possible after the payment.

----End

Follow-up Operations

After purchasing a private CA, you need to activate the CA before using it. For details about how to activate a private CA, see **Activating a Private CA**.

2.2 Activating a Private CA

To use private CAs, you need to activate it first. Only activated private CAs can issue private certificates.

This topic describes how to activate a CA. You can activate a private CA instance and use it as root CA or a subordinate CA. If you activate a CA instance for the first time, you need to activate it as the root CA.

Prerequisites

- You have purchased a private CA instance. For details, see **Buying a Private CA**.
- The private CA is in the **Pending activation** state.

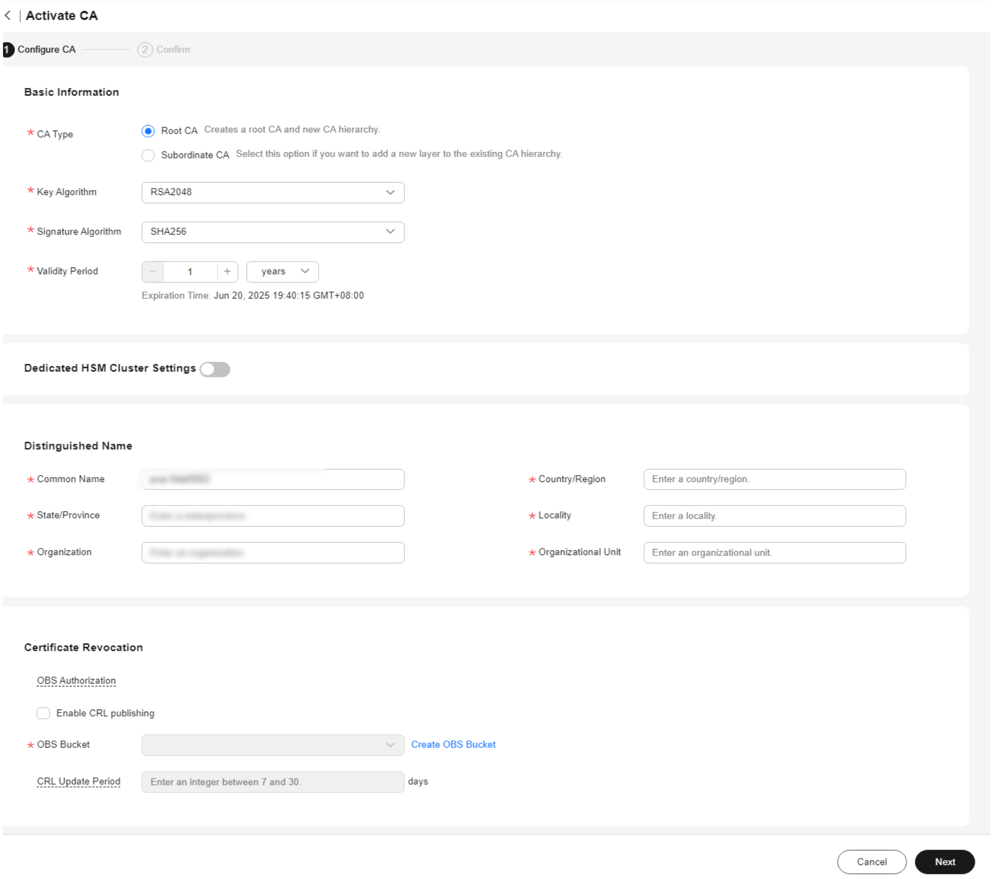
Activating a Root CA.

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. In the navigation pane on the left, choose **Private Certificate Management** > **Private Certificates**.

Step 3 Locate the row of the target CA and click **Activate** in the **Operation** column. On the **Activate CA** page, configure the required parameters.

Figure 2-1 CA settings



< | Activate CA

1 Configure CA — 2 Confirm

Basic Information

* CA Type: ● Root CA Creates a root CA and new CA hierarchy. ○ Subordinate CA Select this option if you want to add a new layer to the existing CA hierarchy.

* Key Algorithm: RSA2048

* Signature Algorithm: SHA256

* Validity Period: 1 years

Expiration Time: Jun 20, 2025 19:40:15 GMT+08:00

Dedicated HSM Cluster Settings

Distinguished Name

* Common Name	[redacted]	* Country/Region	Enter a country/region.
* State/Province	[redacted]	* Locality	Enter a locality.
* Organization	[redacted]	* Organizational Unit	Enter an organizational unit.

Certificate Revocation

OBS Authorization

□ Enable CRL publishing

* OBS Bucket: Create OBS Bucket

CRL Update Period: Enter an integer between 7 and 30. days

1. **CA Type**: Select **Root CA**.

   Root CA: Select this option if you want to create a CA hierarchy.

2. Configure the following parameters.

Table 2-2 Parameters for activating a root CA

Parameter		Description
Basic Information	Key Algorithm	Select a key algorithm from the drop-down list. – RSA2048 – RSA3072 – RSA4096 – EC256 – EC384
	Signature Algorithm	You can select any of the following hash algorithms: – SHA256 – SHA384 – SHA512 – SHA256_PSS – SHA384_PSS – SHA512_PSS
	Validity Period	The validity period of the private CA. Maximum validity period: 30 years.
Distinguished Name (DN)	Common Name	CA name you specify. -
	Country/Region	The country or region where your organization belongs. Enter the two-letter code of the country or region. For example, enter **CN** for China. CN
	State/Province	The name of the province or state where your organization is located. ShenZhen
	Locality	The name of the city where your organization is located. GuangZhou
	Organization	The legal name of your company. -
	Organizational Unit	The department of your company that the applicant belongs to. Cloud Dept.

Parameter		Description
(Optional) Certificate Revocation	OBS Authorization	Whether to authorize PCA to access your OBS bucket and upload the CRL file. If you want to authorize, click **Authorize Now** and complete the authorization as prompted. If you want to cancel the authorization, go to the IAM console to delete the PCAAccessPrivateOBS agency from the agency list. Once you complete the authorization, it will not be required again in the subsequent operations.
	Enable CRL publishing	Whether to enable CRL publishing.
	OBS Bucket	Select an OBS bucket you already have or click **Create OBS Bucket** to create one.
	CRL Update Period	How often the CRL is updated. PCA will generate a new CRL at the specified time. You can set the period to an integer between 7 and 30. If you do not specify a value, it is set to 7 days by default.

Step 4 Check the information and click **Next**.

Step 5 On the confirmation page, check the parameter settings again. Make sure all parameters are set correctly and click **Confirm & Activate**.

----End

Activating a Subordinate CA through an Existing CA

Step 1 Log in to the management console.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. In the navigation pane on the left, choose **Private Certificate Management** > **Private Certificates**.

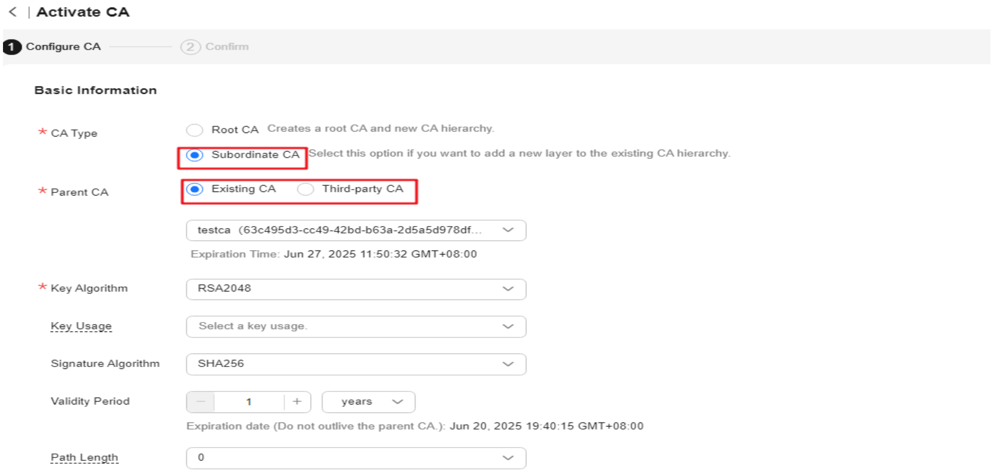
Step 3 Locate the row of the subordinate CA and click **Activate** in the **Operation** column. On the **Install CA Certificate and Activate CA** page, configure the required parameters.

1. To activate a subordinate CA, set the **CA Type** to **Subordinate CA**.

   Subordinate CA: Select this option if you want to add a layer to the existing CA hierarchy.

2. To activate a subordinate CA, you need to specify its parent CA.

Figure 2-2 Parent CA



< | Activate CA

1 Configure CA — 2 Confirm

Basic Information

* CA Type
○ Root CA Creates a root CA and new CA hierarchy.
● Subordinate CA Select this option if you want to add a new layer to the existing CA hierarchy.

* Parent CA
● Existing CA ○ Third-party CA

testca (63c495d3-cc49-42bd-b63a-2d5a5d978df...
Expiration Time: Jun 27, 2025 11:50:32 GMT+08:00

* Key Algorithm: RSA2048

Key Usage: Select a key usage.

Signature Algorithm: SHA256

Validity Period: 1 years
Expiration date (Do not outlive the parent CA.): Jun 20, 2025 19:40:15 GMT+08:00

Path Length: 0

– Select **Existing CA**, select a CA you have created from the drop-down list box, and set the following parameters.

Parameter		Description
Basic Information	Key Algorithm	Select a key algorithm from the drop-down list. ■ RSA2048 ■ RSA3072 ■ RSA4096 ■ EC256 ■ EC384
	(Optional) Key Usage	Select a key usage. ■ digitalSignature ■ nonRepudiation ■ keyEncipherment ■ dataEncipherment ■ keyAgreement ■ keyCertSign ■ cRLSign ■ encipherOnly ■ decipherOnly

Parameter		Description
	Signature Algorithm	You can select any of the following hash algorithms: ▪ SHA256 ▪ SHA384 ▪ SHA512 ▪ SHA256_PSS ▪ SHA384_PSS ▪ SHA512_PSS
	Validity Period	The validity period of the private CA. Maximum validity period: 20 years.
	Path Length	The path length of the subordinate CA. The path length controls how many layers of subordinate CAs the current subordinate CA can issue. (The last layer of the certificate chain is a private certificate). **NOTE** A certificate chain is made up of root CAs, subordinate CAs, and private certificates in a fixed sequence to validate the trust of a certificate at a lower layer.
Distinguished Name (DN)	Common Name	CA name you specify. -
	Country/Region	The country or region where your organization belongs. Enter the two-letter code of the country or region. For example, enter **CN** for China. CN
	State/Province	The name of the province or state where your organization is located. ShenZhen
	Locality	The name of the city where your organization is located. GuangZhou
	Organization	The legal name of your company. -
	Organizational Unit	The department of your company that the applicant belongs to. Cloud Dept.

Parameter		Description
(Optional) Certificate Revocation	OBS Authorization	Whether to authorize PCA to access your OBS bucket and upload the CRL file. If you want to authorize, click **Authorize Now** and complete the authorization as prompted. If you want to cancel the authorization, go to the IAM console to delete the PCAAccessPrivateOBS agency from the agency list. Once you complete the authorization, it will not be required again in the subsequent operations.
	Enable CRL publishing	Whether to enable CRL publishing.
	OBS Bucket	Select an OBS bucket you already have or click **Create OBS Bucket** to create an OBS bucket.
	CRL Update Period	How often the CRL is updated. PCA will generate a new CRL at the specified time. You can set the period to an integer between 7 and 30. If you do not specify a value, it is set to 7 days by default.

Step 4 Check the information and click **Next**.

Step 5 On the confirmation page, check the parameter settings again. Make sure all parameters are set correctly and click **Confirm & Activate**.

----End

Activating a Subordinate CA from a Third-Party CA

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. In the navigation pane on the left, choose **Private Certificate Management** > **Private Certificates**.

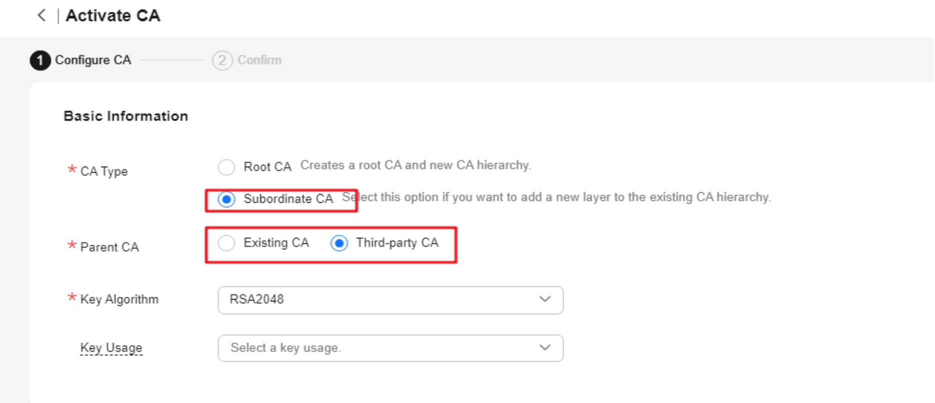
Step 3 Locate the row of the subordinate CA and click **Activate** in the **Operation** column. On the **Activate CA** page, configure the required parameters.

1. To activate a subordinate CA, set the **CA Type** to **Subordinate CA**.

   Subordinate CA: Select this option if you want to add a layer to the existing CA hierarchy.

2. To activate a subordinate CA, you need to specify its parent CA.

Figure 2-3 Parent CA



< | **Activate CA**

1 Configure CA — 2 Confirm

Basic Information

* CA Type ○ Root CA Creates a root CA and new CA hierarchy.
● Subordinate CA Select this option if you want to add a new layer to the existing CA hierarchy.

* Parent CA ○ Existing CA ● Third-party CA

* Key Algorithm RSA2048

Key Usage Select a key usage.

– Select **Third-party CA** and set the following parameters.

Parameter		**Description**
Basic Information	Key Algorithm	Select a key algorithm from the drop-down list. ■ RSA2048 ■ RSA3072 ■ RSA4096 ■ EC256 ■ EC384
	(Optional) Key Usage	Select a key usage. ■ digitalSignature ■ nonRepudiation ■ keyEncipherment ■ dataEncipherment ■ keyAgreement ■ keyCertSign ■ cRLSign ■ encipherOnly ■ decipherOnly

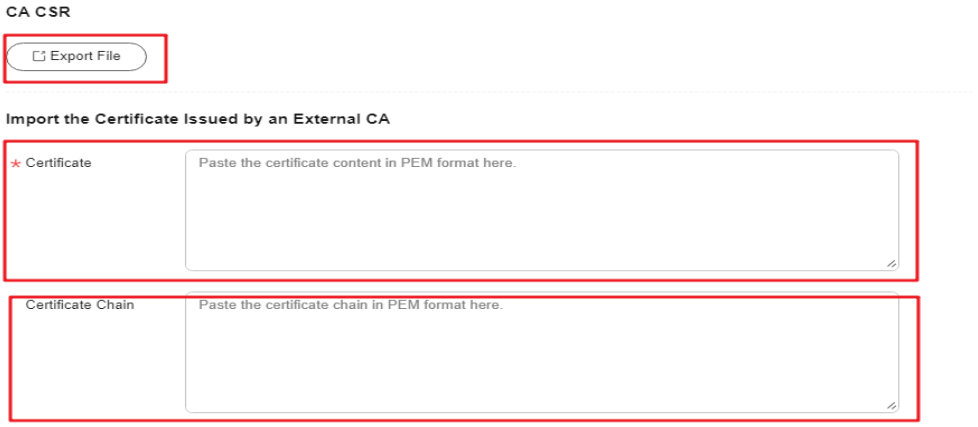
Parameter		Description
	Signature Algorithm	You can select any of the following hash algorithms: ■ SHA256 ■ SHA384 ■ SHA512 ■ SHA256_PSS ■ SHA384_PSS ■ SHA512_PSS
	Validity Period	The validity period of the private CA. Maximum validity period: 20 years.
	Path Length	The path length of the subordinate CA. The path length controls how many layers of subordinate CAs the current subordinate CA can issue. (The last layer of the certificate chain is a private certificate). **NOTE** A certificate chain is made up of root CAs, subordinate CAs, and private certificates in a fixed sequence to validate the trust of a certificate at a lower layer.
Distinguished Name (DN)	Common Name	CA name you specify. -
	Country/Region	The country or region where your organization belongs. Enter the two-letter code of the country or region. For example, enter **CN** for China. CN
	State/Province	The name of the province or state where your organization is located. ShenZhen
	Locality	The name of the city where your organization is located. GuangZhou
	Organization	The legal name of your company. -
	Organizational Unit	The department of your company that the applicant belongs to. Cloud Dept.

Parameter		Description
(Optional) Certificate Revocation	OBS Authorization	Whether to authorize PCA to access your OBS bucket and upload the CRL file. If you want to authorize, click **Authorize Now** and complete the authorization as prompted. If you want to cancel the authorization, go to the IAM console to delete the agency from the agency list. Once you complete the authorization, it will not be required again in the subsequent operations.
	Enable CRL publishing	Whether to enable CRL publishing.
	OBS Bucket	Select an OBS bucket you already have or click **Create OBS Bucket** to create an OBS bucket.
	CRL Update Period	How often the CRL is updated. PCA will generate a new CRL at the specified time. You can set the period to an integer between 7 and 30. If you do not specify a value, it is set to 7 days by default.

Step 4 Check the information and click **Save and Next**.

Step 5 Check the information again and complete required parameters.

Figure 2-4 Third-Party CA



CA CSR

Export File

Import the Certificate Issued by an External CA

* Certificate: Paste the certificate content in PEM format here.

Certificate Chain: Paste the certificate chain in PEM format here.

1. Export the CSR.

   On the **CA CSR** pane, click **Export File**.

   The PEM CSR is exported to a file and is signed by a parent CA.

2. Use an external CA to issue a certificate.

   Use your private CA to issue a certificate for the subordinate private CA you want to activate.

3. Import the certificate.

   Import the certificate and certificate chain in the **Import the Certificate Issued by an External CA** pane.

Table 2-3 Parameter descriptions

Parameter	Description
Certificate	Open the PEM file in the certificate to be uploaded as a text file with the extension **.pem** and copy the certificate content to this text box.
Certificate Chain	Open the PEM file in the certificate to be uploaded as a text file with the extension **.pem** and copy the certificate chain to this text box.

Step 6 Check the settings and click **Confirm & Activate**. The subordinate CA is activated.

----End

Follow-up Operations

You can use an activated subordinate CA to issue private certificates. For details, see **Applying for a Private Certificate**.

2.3 Viewing Private CA Details

This topic describes how to view the private CA information, including **Common Name**, **Organizational Unit**, **Type**, and **Status**.

Prerequisites

A private CA has been purchased. For details, see **Buying a Private CA**.

Procedure

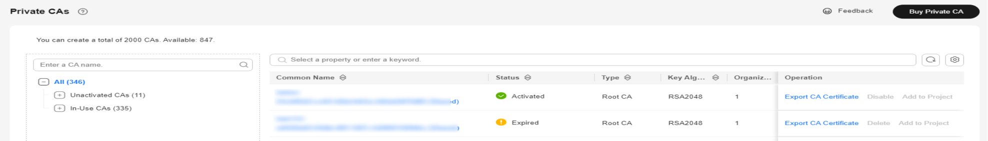
Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. The service console is displayed.

Step 3 In the navigation pane on the left, choose **Private Certificate Management** > **Private CAs**.

Step 4 View private CA information in the private CA list, as shown in **Private CA list**. **Table 2-4** describes the parameters.

Figure 2-5 Private CA list



Private CAs

You can create a total of 2000 CAs. Available: 847.

Enter a CA name.

All (346)

Unactivated CAs (11)

In-Use CAs (335)

Select a property or enter a keyword.

Common Name	Status	Type	Key Alg...	Organiz...	Operation
[redacted]	Activated	Root CA	RSA2048	1	Export CA Certificate Disable Add to Project
[redacted]	Expired	Root CA	RSA2048	1	Export CA Certificate Delete Add to Project

NOTE

- The **Unactivated CAs** list contains CAs in the **Pending activation** state. The **In-Use CAs** list contains CAs in the **Activated**, **Disabled**, **Pending deletion**, and **Expired** states.
- Enter a name of a CA in the search box in the upper right corner and click 🔍 or press **Enter** to search for a specified CA.

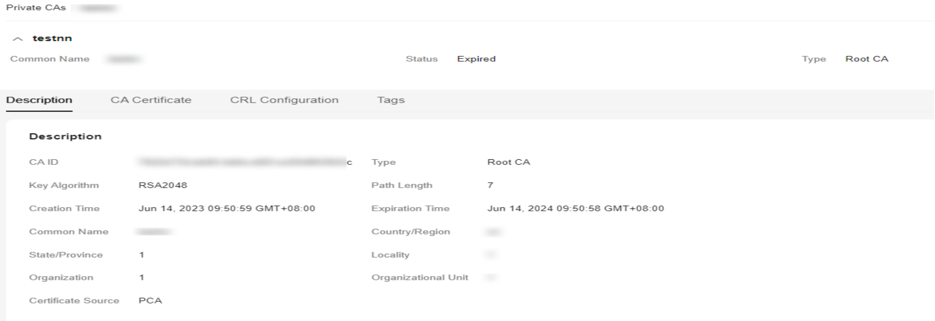
Table 2-4 CA parameter description

Parameter	Description
Common Name	Indicates the user-defined CA name.
Type	Indicates the private CA type. The value can be: ● **Root CA**: The private CA is a root CA and can be used to issue subordinate CAs. ● **Subordinate CA**: The private CA is a subordinate CA.
Organizational Unit	Indicates the name of the organizational unit to which the private CA belongs.
Issued By	Indicates the name of the CA that issues the private CA.
Creation Time	Indicates the time when a private CA is created.
Expiration Time	Indicates the time when a private CA expires.
Status	Indicates the private CA status. The value can be: ● **Pending activation**: The private CA is to be activated. ● **Activated**: The private CA is activated. ● **Disabled**: The private CA is disabled. ● **Pending deletion**: The private CA is to be deleted. ● **Expired**: The private CA is expired.
Operation	You can activate, enable, or disable a CA.

Step 5 Click the common name of a private CA to view its details.

You can click **Add Tag** on the CA details page to identify the CA. TMS's predefined tag function is recommended for adding the same tag to different cloud resources.

Figure 2-6 Private CA details



Private CAs [redacted]

testnn

Common Name [redacted] Status Expired Type Root CA

Description

CA ID	[redacted]	Type	Root CA
Key Algorithm	RSA2048	Path Length	7
Creation Time	Jun 14, 2023 09:50:59 GMT+08:00	Expiration Time	Jun 14, 2024 09:50:58 GMT+08:00
Common Name	[redacted]	Country/Region	[redacted]
State/Province	1	Locality	[redacted]
Organization	1	Organizational Unit	[redacted]
Certificate Source	PCA		

----End

2.4 Configuring a CRL

If you want to use PCA to publish the certificate revocation list (CRL) for a private CA, you can enable CRL configuration.

This topic walks you through how to enable or disable CRL configuration.

Prerequisites

The private CA for which you want to configure a CRL is in the **Activated** or **Disabled** state.

Enabling CRL Configuration

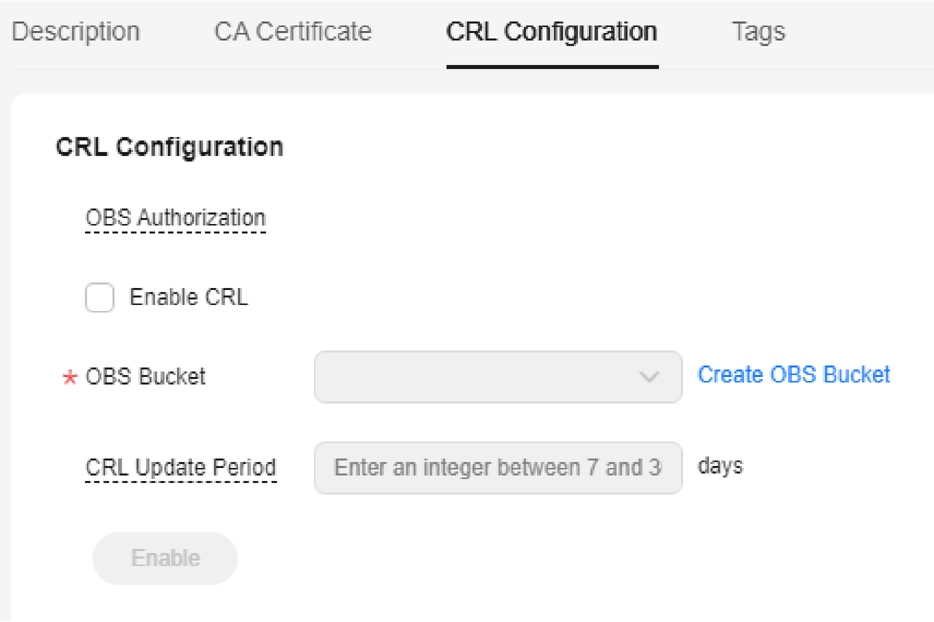
Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. In the navigation pane on the left, choose **Private Certificate Management** > **Private Certificates**.

Step 3 Click the name of a private CA to go to its details page.

Step 4 On the private CA details page, click the **CRL Configuration** tab and configure certificate revocation by referring to **Table 2-5**.

Figure 2-7 CRL Configuration



CRL Configuration

OBS Authorization

□ Enable CRL

* OBS Bucket

CRL Update Period: Enter an integer between 7 and 3 days

Table 2-5 Certificate revocation parameters

Parameter	Description
OBS Authorization	Whether to authorize PCA to access your OBS bucket and upload the CRL file. If you want to authorize, click **Authorize Now** and complete the authorization as prompted. If you want to cancel the authorization, go to the IAM console to delete the agency from the agency list. Once you complete the authorization, it will not be required again in the subsequent operations.
Enable CRL publishing	Whether to enable CRL publishing.
OBS Bucket	Select an OBS bucket you already have or click **Create OBS Bucket** to create an OBS bucket.
CRL Update Period	Indicates the CRL update period. PCA will generate a new CRL at the specified time. You can set the period to an integer between 7 and 30. If you do not specify a value, it is set to 7 days by default.

Step 5 Click **Enable** to enable the CRL. If the system displays a message indicating that the CRL configuration is enabled, the CRL configuration has been enabled.

----End

Disabling CRL Configuration

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. In the navigation pane on the left, choose **Private Certificate Management** > **Private Certificates**.

Step 3 Click the name of a private CA to go to its details page.

Step 4 On the private CA details page, click the **CRL Configuration** tab and click **Disable**. If the system displays a message indicating that the CRL configuration is disabled, the CRL configuration has been disabled.

----End

2.5 Exporting a Private CA Certificate

After a private CA is created and activated, you can export the private CA certificate.

If your web services are accessible through browsers, add the root certificate to your browser trust list and install the private certificate issued by the root CA on your web server to implement HTTPS communications between the client and the server.

If your web services are accessible through a client like Java, manually install the root certificate on the client to ensure that the client can validate the encrypted information on the server.

This topic walks you through how to export a private CA certificate.

Prerequisites

The private CA for which the certificate is to be exported is in the **Activated** state.

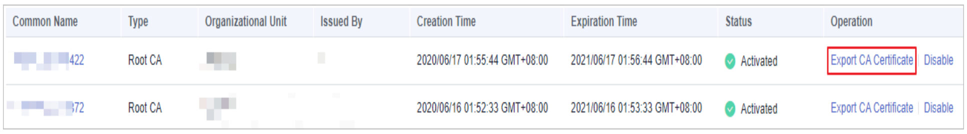
Procedure

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. In the navigation pane on the left, choose **Private Certificate Management** > **Private Certificates**.

Step 3 Locate the row of the desired private CA and click **Export CA Certificate** in the **Operation** column.

Figure 2-8 Exporting a CA certificate



Common Name	Type	Organizational Unit	Issued By	Creation Time	Expiration Time	Status	Operation
[redacted]	Root CA	[redacted]	[redacted]	2020/06/17 01:55:44 GMT+08:00	2021/06/17 01:56:44 GMT+08:00	✓ Activated	Export CA Certificate Disable
[redacted]	Root CA	[redacted]	[redacted]	2020/06/16 01:52:33 GMT+08:00	2021/06/16 01:53:33 GMT+08:00	✓ Activated	Export CA Certificate | Disable

Step 4 In the displayed dialog box, click **OK**.

When you click **OK**, PCA will use the download tool provided by the browser to download the private CA certificate to the specified local directory.

Now, you will obtain a private CA certificate file named ***root CA name*_*certificate*.pem**.

----End

2.6 Disabling a Private CA

If you no longer need a private CA to issue certificates, you can disable the private CA.

If a private CA is disabled, it cannot be used to issue any private certificates. If you want to use this private CA to issue certificates again, it must be enabled first. For details, see .

This topic describes how to disable a private CA.

⚠ CAUTION

Private CAs will also remain billed while they are disabled.

Prerequisites

The private CA to be disabled is in the **Activated** or **Expired** state.

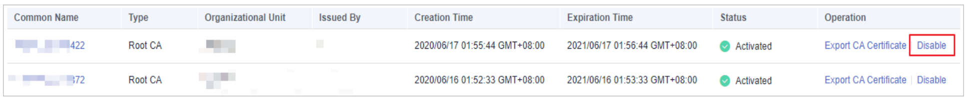
Procedure

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. In the navigation pane on the left, choose **Private Certificate Management** > **Private Certificates**.

Step 3 Locate the row of the desired private CA and click **Disable** in the **Operation** column.

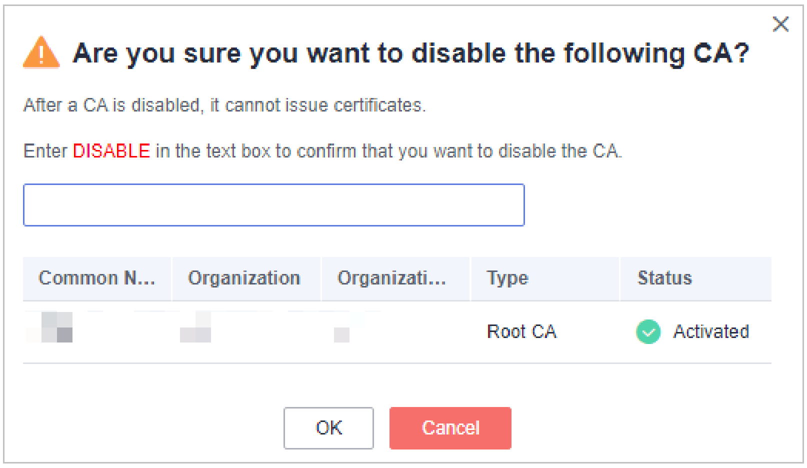
Figure 2-9 Disabling a private CA



Common Name	Type	Organizational Unit	Issued By	Creation Time	Expiration Time	Status	Operation
[redacted]422	Root CA	[redacted]	[redacted]	2020/06/17 01:55:44 GMT+08:00	2021/06/17 01:56:44 GMT+08:00	✓ Activated	Export CA Certificate | Disable
[redacted]372	Root CA	[redacted]	[redacted]	2020/06/16 01:52:33 GMT+08:00	2021/06/16 01:53:33 GMT+08:00	✓ Activated	Export CA Certificate | Disable

Step 4 In the displayed dialog box, enter **DISABLE** and click **OK**.

Figure 2-10 Disable CA



Are you sure you want to disable the following CA?

After a CA is disabled, it cannot issue certificates.

Enter DISABLE in the text box to confirm that you want to disable the CA.

Common N...	Organization	Organizati...	Type	Status
[redacted]	[redacted]	[redacted]	Root CA	Activated

When "CA xxx disabled successfully." is displayed in the upper right corner of the page, and the private CA status changes to **Disabled**, the private CA is disabled successfully.

----End

2.7 Enabling a Private CA

If you need to use a disabled private CA to issue certificates, you can restore the certificate to the activated state.

The following walks you through how to enable a private CA so that you can quickly restore a disabled private CA to the activated or expired state.

Prerequisites

The private CA to be enabled is in the **Disabled** state. For details about how to disable a private CA, see **Disabling a Private CA**.

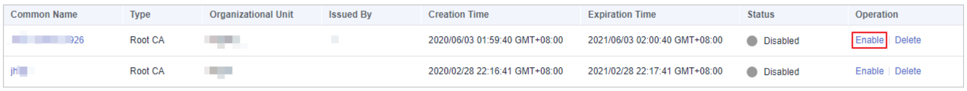
Procedure

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. In the navigation pane on the left, choose **Private Certificate Management** > **Private Certificates**.

Step 3 Locate the row of the desired private CA and click **Enable** in the **Operation** column.

Figure 2-11 Enabling a private CA



Common Name	Type	Organizational Unit	Issued By	Creation Time	Expiration Time	Status	Operation
[redacted]	Root CA	[redacted]	[redacted]	2020/06/03 01:59:40 GMT+08:00	2021/06/03 02:00:40 GMT+08:00	Disabled	Enable | Delete
[redacted]	Root CA	[redacted]		2020/02/28 22:16:41 GMT+08:00	2021/02/28 22:17:41 GMT+08:00	Disabled	Enable | Delete

When "CA xxx enabled successfully." is displayed in the upper right corner of the page, and the private CA status changes to **Activated**, the private CA is enabled successfully.

----End

2.8 Deleting a Private CA

Before deleting a private CA, ensure that it is not in use and will not be used.

If deletion is scheduled for a private CA in the **Disabled** or **Expired** state, the deletion will take effect after a waiting period of 7 to 30 days. If deletion is scheduled for a private CA in the **Pending activation** state, the deletion will take effect immediately. Before the specified deletion date, you can cancel the deletion if you want to use the private CA again. If the specified deletion period expires, the private CA will be permanently deleted. Exercise caution when performing this operation.

⚠ CAUTION

- Private CAs will also remain billed while they are disabled.
- If you delete a private CA, it takes a few days for the deletion to take effect. It takes at least 7 days for a scheduled deletion to take effect (depending on the delay time you configured). During the scheduled deletion period, you will be billed in accordance with the following rules:
  - If you have not canceled the scheduled deletion and the private CA is deleted, the private CA is not billed for this period.
  - If you cancel the scheduled deletion but the private CA is not deleted during this period, the private CA is still billed for this period.

  For example, if you delete a private CA at 00:00 on January 1, 2022 and the private CA is deleted seven days later as scheduled, you will not be billed for the seven days. If you cancel the scheduled deletion at 00:00 on January 4, 2022 and the private CA is not deleted, you will still be billed for the CA for the period from 00:00 on January 1, 2022 to 00:00 on January 4, 2022.

Prerequisites

The private CA to be deleted is in the **Disabled** or **Pending activation** state.

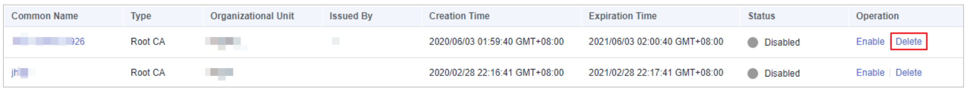
Procedure

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. In the navigation pane on the left, choose **Private Certificate Management** > **Private Certificate**. The **Private Certificate** page is displayed.

Step 3 Locate the row of the private CA to be deleted and click **Delete** in the **Operation** column.

Figure 2-12 Deleting a private CA



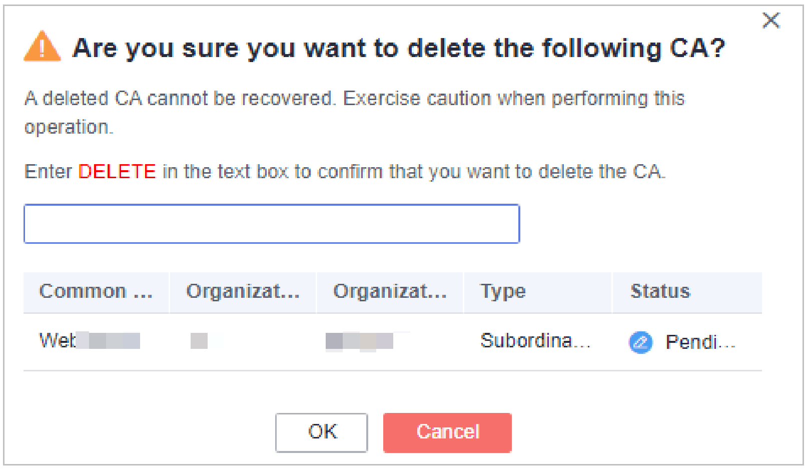
Common Name	Type	Organizational Unit	Issued By	Creation Time	Expiration Time	Status	Operation
[redacted]926	Root CA	[redacted]	[redacted]	2020/06/03 01:59:40 GMT+08:00	2021/06/03 02:00:40 GMT+08:00	● Disabled	Enable Delete
jh[redacted]	Root CA	[redacted]		2020/02/28 22:16:41 GMT+08:00	2021/02/28 22:17:41 GMT+08:00	● Disabled	Enable | Delete

Step 4 The operations vary according to the private CA status.

- Private CA in the **Pending activation** state

  In the displayed dialog box, enter **DELETE** in the text box.

  Figure 2-13 Deleting a private CA in the **Pending activation** state

  Are you sure you want to delete the following CA?

  A deleted CA cannot be recovered. Exercise caution when performing this operation.

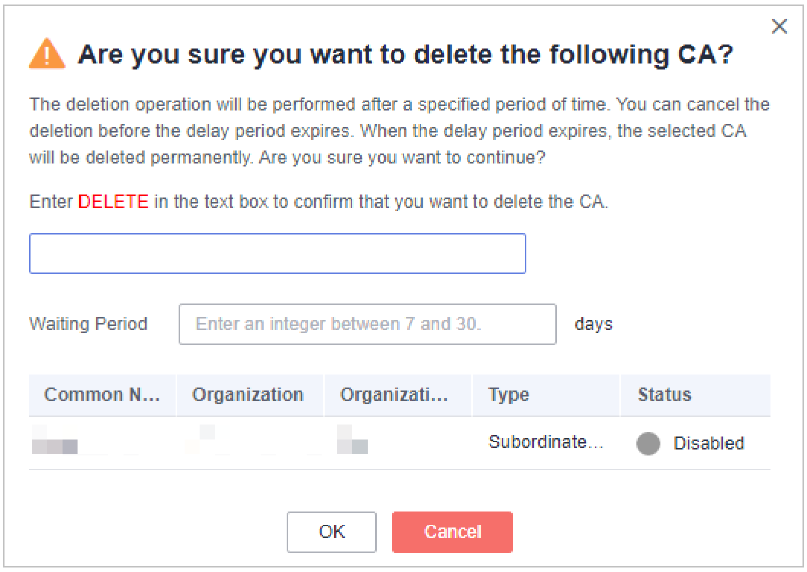
  Enter DELETE in the text box to confirm that you want to delete the CA.

Common ...	Organizat...	Organizat...	Type	Status
Web[redacted]	[redacted]	[redacted]	Subordina...	Pendi...

- Private CA in the **Disabled** or **Expired** state

  In the dialog box that is displayed, enter **DELETE** in the text box and configure the waiting period.

  Figure 2-14 Configuring the waiting period

  Are you sure you want to delete the following CA?

  The deletion operation will be performed after a specified period of time. You can cancel the deletion before the delay period expires. When the delay period expires, the selected CA will be deleted permanently. Are you sure you want to continue?

  Enter DELETE in the text box to confirm that you want to delete the CA.

  Waiting Period: Enter an integer between 7 and 30. days

Common N...	Organization	Organizati...	Type	Status
[redacted]	[redacted]	[redacted]	Subordinate...	● Disabled

Step 5 Click **OK**.

- Private CA in the **Pending activation** state: If message "CA xxx deleted successfully." is displayed in the upper right corner of the page, the private CA is deleted successfully.

- Private CA in the **Disabled** or **Expired** state: If the private CA status changes to **Pending deletion**, the private CA will be deleted after the waiting period expires.

----End

2.9 Canceling the Deletion of a Private CA

This topic describes how to cancel the scheduled deletion of one or more private CAs prior to the real deletion. After the cancellation, the private CA is in the **Disabled** state.

Prerequisites

The private CA for which you want to cancel the scheduled deletion is in **Pending deletion** status.

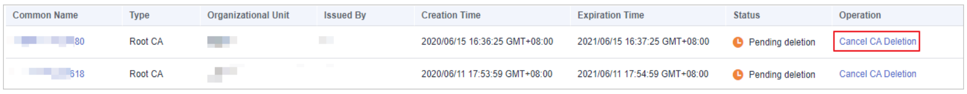
Procedure

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. In the navigation pane on the left, choose **Private Certificate Management** > **Private Certificate**. The **Private Certificate** page is displayed.

Step 3 Locate the row of the desired private CA and click **Cancel CA Deletion** in the **Operation** column.

Figure 2-15 Canceling the deletion of a private CA



Common Name	Type	Organizational Unit	Issued By	Creation Time	Expiration Time	Status	Operation
[redacted]80	Root CA	[redacted]	[redacted]	2020/06/15 16:36:25 GMT+08:00	2021/06/15 16:37:25 GMT+08:00	● Pending deletion	Cancel CA Deletion
[redacted]618	Root CA	[redacted]		2020/06/11 17:53:59 GMT+08:00	2021/06/11 17:54:59 GMT+08:00	● Pending deletion	Cancel CA Deletion

Step 4 In the displayed dialog box, click **OK**.

If message "Deletion of CA xxx cancelled successfully." is displayed in the upper right corner of the page and the private CA status changes to **Disabled**, the deletion of the private CA is cancelled successfully.

After the deletion is canceled, if you want to use the private CA to issue certificates, you need to enable the private CA. For details, see **Enabling a Private CA**.

----End

3 Private Certificate Management

3.1 Applying for a Private Certificate

After you create and activate a private CA, you can apply for private certificates from the private CA and use them for identity authentication, data encryption, and data decryption of internal applications.

This topic walks you through how to apply for a private certificate. You can apply for a maximum of 100,000 certificates.

Prerequisites

You have purchased and activated a private CA. For details, see **Purchasing a Private CA** and **Activating a Private CA**.

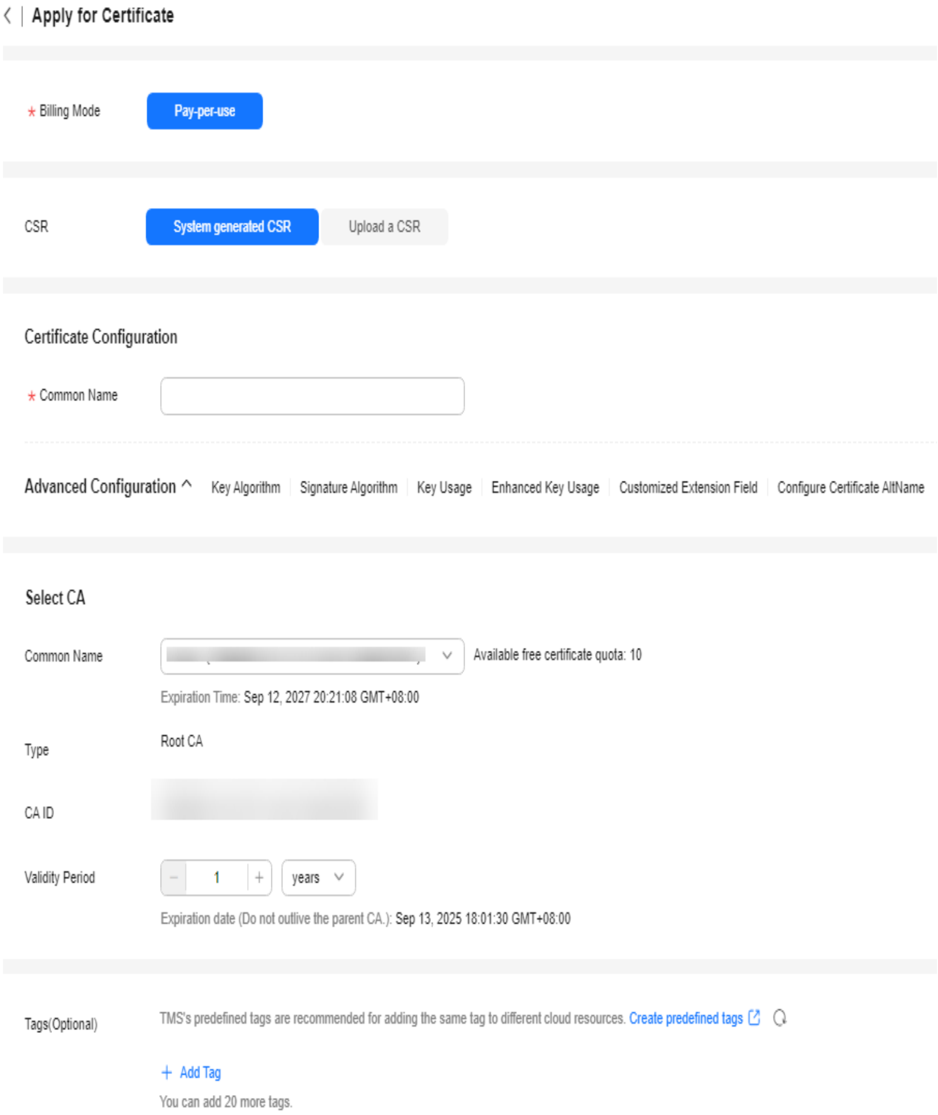
Procedure

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. In the navigation pane on the left, choose **Private Certificate Management** > **Private Certificate**. The **Private Certificate** page is displayed.

Step 3 In the upper right corner of the private certificate list, click **Apply for Certificate**.

Figure 3-1 System generated CSR



〈 | Apply for Certificate

* Billing Mode: Pay-per-use

CSR: System generated CSR | Upload a CSR

Certificate Configuration

* Common Name:

Advanced Configuration ^ Key Algorithm | Signature Algorithm | Key Usage | Enhanced Key Usage | Customized Extension Field | Configure Certificate AltName

Select CA

Common Name: [redacted] Available free certificate quota: 10

Expiration Time: Sep 12, 2027 20:21:08 GMT+08:00

Type: Root CA

CA ID: [redacted]

Validity Period: 1 years

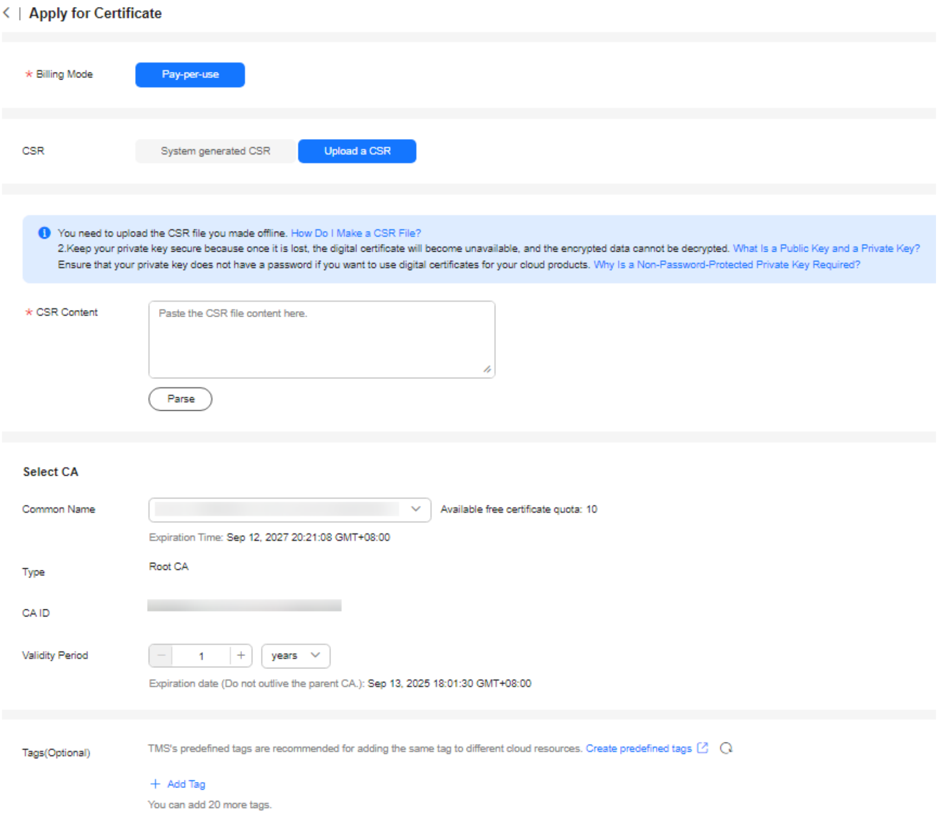
Expiration date (Do not outlive the parent CA.): Sep 13, 2025 18:01:30 GMT+08:00

Tags(Optional): TMS's predefined tags are recommended for adding the same tag to different cloud resources. Create predefined tags

+ Add Tag

You can add 20 more tags.

Figure 3-2 Upload a CSR



< | **Apply for Certificate**

* Billing Mode: Pay-per-use

CSR: System generated CSR | Upload a CSR

You need to upload the CSR file you made offline. How Do I Make a CSR File?
2.Keep your private key secure because once it is lost, the digital certificate will become unavailable, and the encrypted data cannot be decrypted. What Is a Public Key and a Private Key?
Ensure that your private key does not have a password if you want to use digital certificates for your cloud products. Why Is a Non-Password-Protected Private Key Required?

* CSR Content: Paste the CSR file content here.

Parse

Select CA

Common Name: Available free certificate quota: 10

Expiration Time: Sep 12, 2027 20:21:08 GMT+08:00

Type: Root CA

CA ID

Validity Period: 1 years

Expiration date (Do not outlive the parent CA.): Sep 13, 2025 18:01:30 GMT+08:00

Tags(Optional): TMS's predefined tags are recommended for adding the same tag to different cloud resources. Create predefined tags

+ Add Tag

You can add 20 more tags.

1. Select the CSR file generation method.

Table 3-1 Certificate signing request (CSR)

Parameter	Description
System generated CSR	The system automatically generates a certificate private key. Once the certificate is issued, you can download your certificate and private key on the certificate management page.
Upload a CSR	You can use an existing CSR. The procedure is as follows: 1. You need to manually generate a CSR file and paste the content of the CSR file into the text box. 2. Click **Parse**.

Parameter	Description
NOTE – To obtain a certificate, a CSR file needs to be submitted to the CA for review. A CSR file contains a public key and a distinguished name (DN). Typically, a CSR file is generated by a web server, and a pair of public and private keys are created along with the CSR file. – You are advised to select **System generated CSR** to avoid approval failure caused by incorrect content. – A private key file will be generated when the CSR file is generated manually. Keep and back up your private key properly. A private key maps to a certificate. If a private key is lost, the corresponding certificate becomes invalid. Huawei Cloud is not responsible for keeping your private key. You need to purchase a new certificate if the private key is lost. – CCM has strict requirements on the key length of a CSR file. The key length must be 2,048 bits and the key type must be RSA.	

2. Configure certificate details.

   Perform this step only when you select **System generated CSR** for **CSR**.

   Common Name: You can customize the name of the private certificate.

3. Click ^ on the right of **Advanced Configuration**.

   Perform this step only when you select **System generated CSR** for **CSR**.

Table 3-2 Advanced settings

Parameter	Description	Example Value
Key Algorithm	**Key Algorithm**: Select the key algorithm and key size for the private certificate. The value can be **RSA2048**, **RSA4096**, **EC256**, or **EC384**.	RSA2048
Signature Algorithm	Select the signature hash algorithm for the private certificate. The value can be **SHA256**, **SHA384**, or **SHA512**.	SHA256

Parameter	Description	Example Value
Key Usage	Select the key usage of the certificate. You can select more than one option. – **digitalSignature**: The key is used as a digital signature. – **nonRepudiation**: The key can be used for non-repudiation. – **keyEncipherment**: The key can be used for key encryption. – **dataEncipherment**: The key can be used for data encryption. – **keyAgreement**: The key can be used as a key-agreement protocol. – **keyCertSign**: The key can be used to issue certificates. – **cRLSign**: The key can be used for signing blacklists. – **encipherOnly**: The key can be used for encryption only. – **decipherOnly**: The key can be used for decryption only.	digitalSignature
Enhanced Key Usage	Select the enhanced key usage for the certificate. You can select more than one option. – **Server identity authentication** – **Client identity authentication** – **Code signature** – **Secure email** – **Timestamp** – **Smart card login**	Server identity authentication
Customized Extension Field	Enter customized information of the certificate.	None

Parameter	Description	Example Value
Configure Certificate AltName	This field is optional. If you want to use the private certificate to multiple subjects, you can add more AltName records. You can configure **IP address**, **DNS**, **Email**, **URI**, or **UPN** for **AltName**. When you configure **AltName**, enter the value according to the value type you select. – **IP address**: Enter an IP address. – **DNS**: Enter the domain name. – **Email**: Enter an email address. – **URI**: Enter the network address. – **UPN**: user principal name A maximum of 20 AltName records can be configured.	None

4. Select a CA.

Table 3-3 Parameters for selecting a CA

Parameter	Description
Common Name	Select a common name of the private CA you want.
Type	The CA type is autofilled after you specify **Common Name**.
CA ID	The CA ID is autofilled after you specify **Common Name**.
Validity Period	Configure the validity period of the private certificate. **NOTE** – You can customize the validity period of a private certificate. The validity period cannot outlive the validity period of the activated private CA. – A private CA can be valid for up to 30 years.

Step 4 (Optional) Tags: Add a tag to the purchased certificate. For details, see **Creating a Tag**.

Step 5 Confirm the information and click **OK**.

After you submit your application, the system will return to the private certificate list page. Message "Certificate xxx applied for successfully." is displayed in the upper right corner of the page, indicating that the private certificate application is successful.

----End

Follow-up Operations

When a private certificate is issued, you can download it and distribute it to the certificate subject for installation. For details, see **Downloading a Private Certificate**.

3.2 Downloading a Private Certificate

Before using a private certificate, you need to download it. Only downloaded certificate can be assigned to the corresponding certificate subject so that they can install and use the certificate.

This topic describes how to download a private certificate. Only certificates in the **Issued** state can be downloaded.

Prerequisites

Your private certificate is in the **Issued** state. For details, see **Applying for a Private Certificate**.

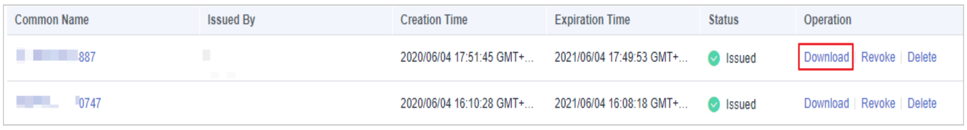
Procedure

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. In the navigation pane on the left, choose **Private Certificate Management** > **Private Certificate**. The **Private Certificate** page is displayed.

Step 3 Locate the row of the desired private certificate and click **Download** in the **Operation** column.

Figure 3-3 Downloading a private certificate



Common Name	Issued By	Creation Time	Expiration Time	Status	Operation
[redacted]887	[redacted]	2020/06/04 17:51:45 GMT+...	2021/06/04 17:49:53 GMT+...	✓ Issued	Download | Revoke | Delete
[redacted]0747		2020/06/04 16:10:28 GMT+...	2021/06/04 16:08:18 GMT+...	✓ Issued	Download | Revoke | Delete

Step 4 Click the target tab based on your server type and click **Download Certificate**.

PCA will use the download tool provided by the browser to download the private certificate to the specified local directory.

----End

Installing a Private Certificate

A private certificate must be installed on the corresponding server. The installation procedure for private certificates is the same as that for SSL certificates. You can refer to **Table 3-4**.

Table 3-4 Example for installing an SSL certificate

Server Type	Operation
Tomcat	**Installing an SSL Certificate on a Tomcat Server**
Nginx	**Installing an SSL Certificate on an Nginx Server**
Apache	**Installing an SSL Certificate on an Apache Server**
IIS	**Installing an SSL Certificate on an IIS Server**
WebLogic	**Installing an SSL Certificate on a WebLogic Server**
Resin	**Installing an SSL Certificate on a Resin Server**

Description of Downloaded Certificate Files

The downloaded certificate files vary depending on the CSR file type (**System generated CSR** or **Upload a CSR**) configured when you apply for a private certificate.

- **System generated CSR**

  Table 3-5 describes the downloaded files.

Table 3-5 Description of downloaded files (1)

Server Type	Files in the Package
Tomcat	**keystorePass.txt**: certificate password **server.jks**: certificate file
Nginx	**server.crt**: certificate files, containing the server certificate and certificate chain **server.key**: certificate private key file
Apache	**chain.crt**: certificate chain file **server.crt**: certificate file **server.key**: certificate private key file

Server Type	Files in the Package
IIS	**keystorePass.txt**: certificate password **server.pfx**: certificate file
Others	**chain.pem**: certificate chain file **server.key**: certificate private key file **server.pem**: certificate file

- **Upload a CSR**

  Table 3-6 describes the downloaded files.

Table 3-6 Description of downloaded files (2)

Server Type	Files in the Package
Tomcat	**server.crt**: certificate file **chain.crt**: certificate chain file
Nginx	**server.crt**: certificate file
Apache	**server.crt**: certificate file **chain.crt**: certificate chain file
IIS	**server.crt**: certificate file **chain.crt**: certificate chain file
Others	**cert.pem**: certificate file **chain.pem**: certificate chain file

3.3 Installing a Private Certificate

3.3.1 Trusting a Private Root CA

Before installing a private certificate, you need to add the root CA to the trusted root certificate authorities of the client or server.

Prerequisites

You have created and exported a private root CA. For details, see **Exporting a Private CA Certificate**.

Constraints

- One-way authentication

  To win more trust from the client for your server, you need to add the root CA that issue the server certificate to the client-end trusted CA store.

- Two-way authentication

  To enable two-way authentication between a server and a client, each side needs to add the root CA of the other side to their own trusted root CA store.

Procedure

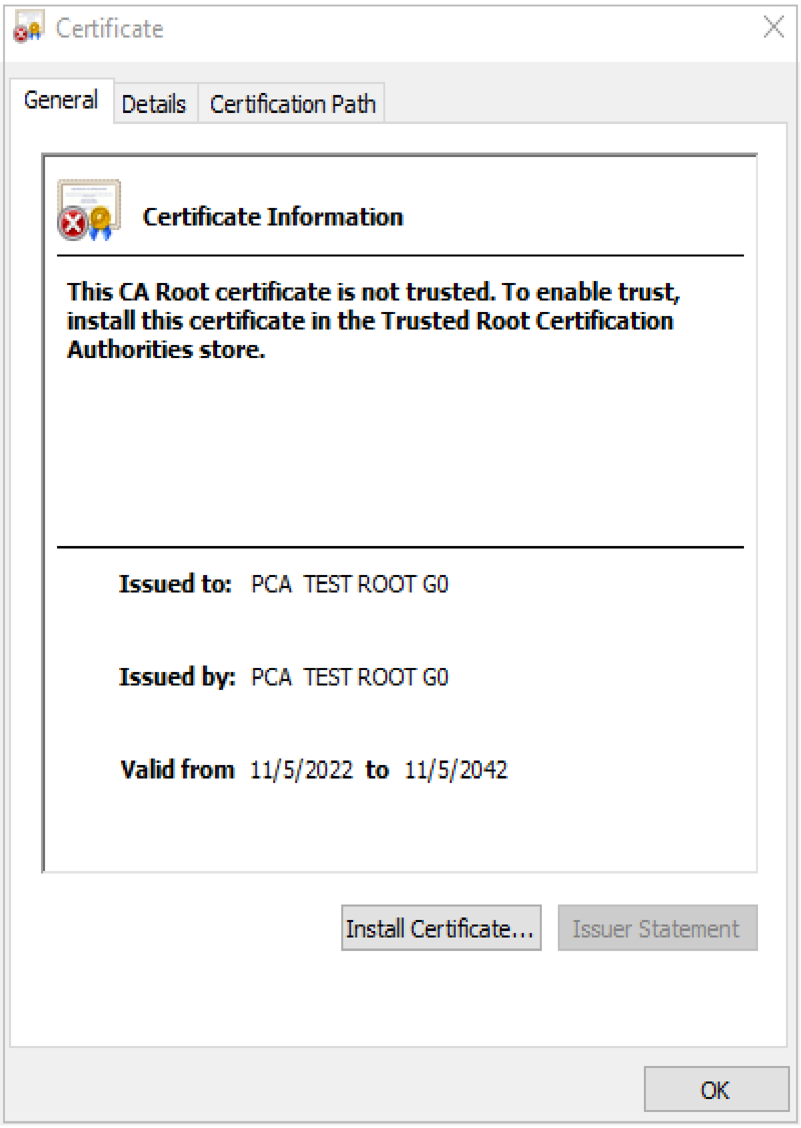
Use either of the following methods to add the root CA to trusted root certification authorities based on the operating system:

NOTE

Root CA **PCA TEST ROOT G0** is used as an example.

- **Windows**
  a. Change the file name extension of the root CA certificate from .pem to .crt. and double-click the certificate file. The root CA certificate information shows that the root certificate is untrusted.

Figure 3-4 Root CA not trusted



Certificate Information

This CA Root certificate is not trusted. To enable trust, install this certificate in the Trusted Root Certification Authorities store.

Issued to: PCA TEST ROOT G0

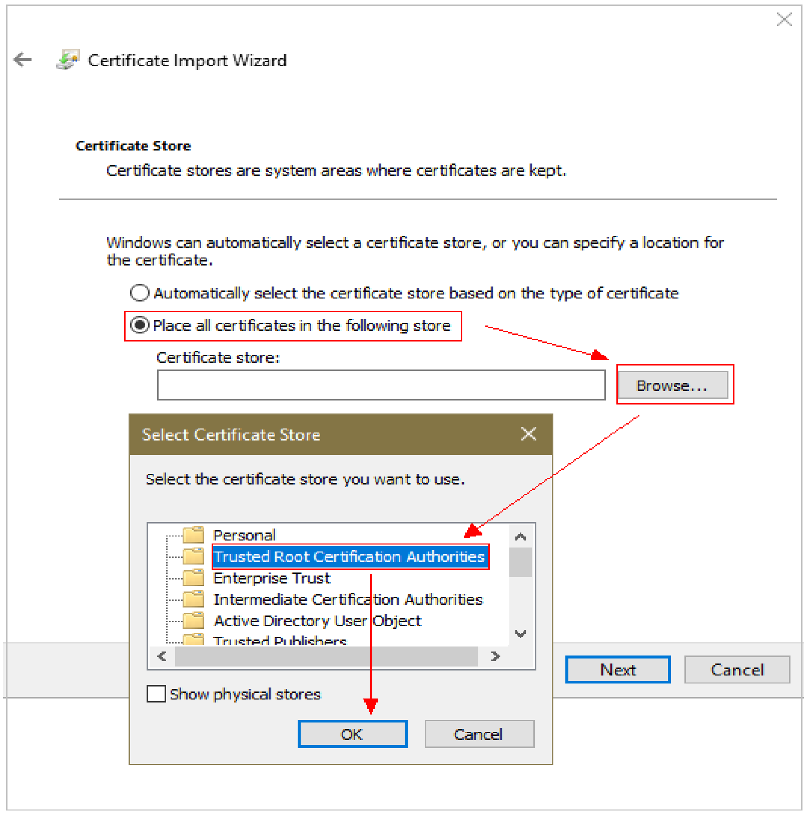
Issued by: PCA TEST ROOT G0

Valid from 11/5/2022 **to** 11/5/2042

b. Click **Install Certificate**, select a certificate storage location based on the certificate usage, and click **Next**.

c. As shown in **Figure 3-5**, select **Place all certificates in the following store** and click **Browse**. Then, select **Trusted Root Certification Authorities** and click **OK**.

Figure 3-5 Storing a root certificate



Certificate Import Wizard

Certificate Store

Certificate stores are system areas where certificates are kept.

Windows can automatically select a certificate store, or you can specify a location for the certificate.

○ Automatically select the certificate store based on the type of certificate

● Place all certificates in the following store

Certificate store:

Select Certificate Store

Select the certificate store you want to use.

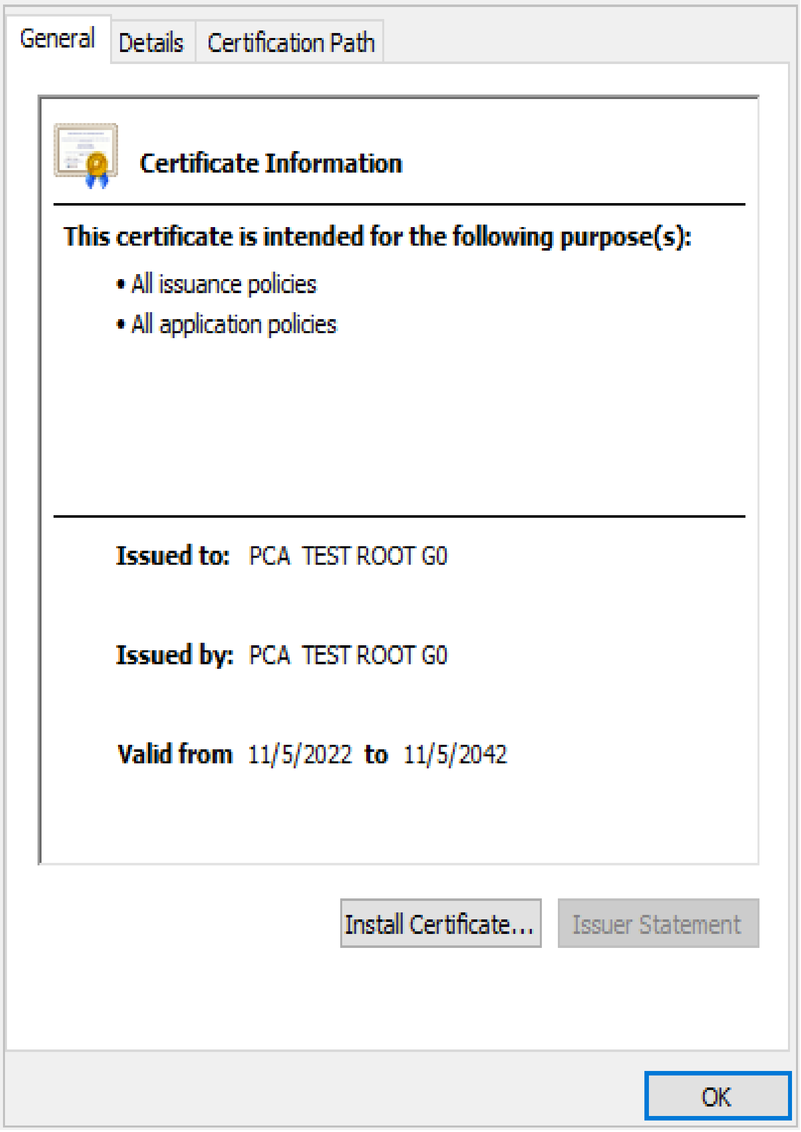
Personal
Trusted Root Certification Authorities
Enterprise Trust
Intermediate Certification Authorities
Active Directory User Object
Trusted Publishers

□ Show physical stores

d. Click **Next**, and then click **OK**. A dialog box is displayed, indicating that Windows will trust all certificates issued by the private root CA. Click **Yes**.

e. Double-click the root CA certificate file. If the **Certificate Information** area shows that the system trusts the root CA certificate, the root CA is added to the trusted root CAs.

Figure 3-6 Trusted root CA



Certificate Information

This certificate is intended for the following purpose(s):

- All issuance policies
- All application policies

Issued to: PCA TEST ROOT G0

Issued by: PCA TEST ROOT G0

Valid from 11/5/2022 to 11/5/2042

- **Linux**

  The path for and method of storing root CA certificates vary depending on Linux OS versions. The following procedure use CentOS 6 as an example:

  a. Copy the root CA certificate file to the **/home/** directory.

  b. If **ca-certificates** is not installed on the server, run the following command to install **ca-certificates**:

     yum install ca-certificates

  c. Copy the root CA certificate to the **/etc/pki/ca-trust/source/anchors/** directory:

     cp /home/root.crt /etc/pki/ca-trust/source/anchors/

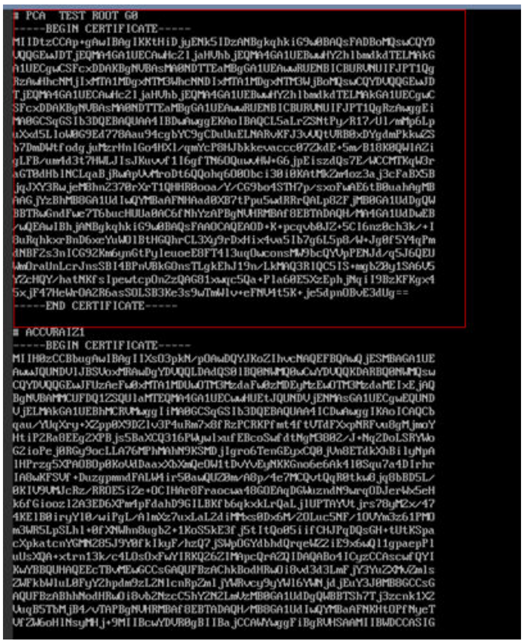
  d. Add the root CA certificate to the trusted root certificate file:

     update-ca-trust extract

  e. Check whether the information about the newly added root CA certificate is included in the command output:

     view /etc/pki/tls/certs/ca-bundle.crt

Figure 3-7 Root CA certificate added to the trusted CA list



```
# PCA  TEST ROOT G0
-----BEGIN CERTIFICATE-----
MIIDtzCCAp+gAwIBAgIKKtHiDjyENk5IDzANBgkqhkiG9w0BAQsFADBoMQswCQYD
VQQGEwJDTjEQMA4GA1UECAwHc21jaHVhbjEQMA4GA1UEBwwHY2hlbmdkdTELMAkG
A1UECgwCSFcxDDAKBgNVBAsMA0NDTTEaMBgGA1UEAwwRUENBICBURVNUIFJPT1Qg
RzAwHhcNMjIxMTA1MDgxNTM3WhcNNDIxMTA1MDgxNTM3WjBoMQswCQYDVQQGEwJD
TjEQMA4GA1UECAwHc21jaHVhbjEQMA4GA1UEBwwHY2hlbmdkdTELMAkGA1UECgwC
SFcxDDAKBgNVBAsMA0NDTTEaMBgGA1UEAwwRUENBICBURVNUIFJPT1QgRzAwggEi
MA0GCSqGSIb3DQEBAQUAA4IBDwAwggEKAoIBAQCL5aLrZSNtPy/R17/Ul/mMp6Lp
uXxd5LloW0G9Ed778Aau94cgbYC9gCDuUuELNARvKFJ3vUQtVRB0xDYgdmPkkwZS
b7DmDWtfodgjuMzrHnIGo4HX1/qmYcP8HJbkkevaccc07ZkdE+5m/B18K0QW1AZi
gLFB/um4d3t7HWLJIsJKuvvf1l6gfTN6OQuwvHW+G6jpEiszdQs7E/WCCMTKqW3r
aGT0dHb1NCLqaBjRwApVVMroDt6QQohq6O0Obci30i0KAtMkZm4oz3aj3cFaBX5B
jqJXY3RwjeMBhn2370rXrT1QHHR0ooa/Y/CG9bo4STH7p/sxoFwAE6tB0uahAgMB
AAGjYzBhMB0GA1UdIwQYMBaAFNHAad0XB7tPpu5wdRRrQALp82FjMB0GA1UdDgQW
BBTRwGndFwe7T6bucHUUa0AC6fNhYzAPBgNVHRMBAf8EBTADAQH/MA4GA1UdDwEB
/wQEAwIBhjANBgkqhkiG9w0BAQsFAAOCAQEAOD+K+pcqvb0JZ+5CI6nz0ch3k/+I
BuRqhkxrBnD6xeYuWD1BtHGQhrCL3Xy9rDxHix4va5Ib7g6L5p8/W+Jg0f5Y4qPm
dNBFZs3nICG92Km6ynGtPyleuoeE8FT4I3uqOwconsMW9bcQYVpPENJd/q5J6QEU
WmOraUnLcrJnsSBI4BPnVBkGOnsTLgkEhJ19n/LkMAQ3R1QC5IS+mgb28y1SA6V5
YZcHQY/hatNKfsIpewtcpOn2zQAG81xwqc5Qa+Pla60E5XzEphjMqiI9BzKFKgx4
5xjF47HeWrOAZR6asSOLSB3Ke3s9wTmWlv+eFNV4t5K+je5dpnOBvE3dUg==
-----END CERTIFICATE-----

# ACCVRAIZ1
-----BEGIN CERTIFICATE-----
MIIH0zCCBbugAwIBAgIIXsO3pkN/pOAwDQYJKoZIhvcNAQEFBQAwQjESMBAGA1UE
AwwJQUNDVlJBSVoxMRAwDgYDVQQLDAdQS0lBQ0NWMQ0wCwYDVQQKDARBQ0NWMQsw
CQYDVQQGEwJFUzAeFw0xMTA1MDUwOTM3MzdaFw0zMDEyMzEwOTM3MzdaMEIxEjAQ
BgNVBAMMCUFDQ1ZSQUlaMTEQMA4GA1UECwwHUEtJQUNDVjENMAsGA1UECgwEQUND
VjELMAkGA1UEBhMCRVMwggIiMA0GCSqGSIb3DQEBAQUAA4ICDwAwggIKAoICAQCb
qau/YUqXry+XZpp0X9DZlv3P4uRm7x8fRzPCRKPfmt4ftVTdFXxpNRFvu8gMjmoY
HtiP2Ra8EEg2XPBjs5BaXCQ316PWywlxufEBcoSwfdtNgM3802/J+Nq2DoLSRYWo
G2ioPej0RGy9ocLLA76MPhMAhN9KSMDjIgro6TenGEyxCQ0jVn8ETdkXhBilyNpA
lHPrzg5XPAOBOp0KoVdDaaxXbXmQeOW1tDvYvEyNKKGno6e6Ak4l0Squ7a4DIrhr
IA8wKFSVf+DuzgpmndFALW4ir50awQUZ0m/A8p/4e7MCQvtQqR0tkw8jq8bBD5L/
0KIV9VMJcRz/RROE5iZe+OCIHAr8Fraocwa48GOEAqDGWuzndN9wrqODJerWx5eH
k6fGioozl2A3ED6XPm4pFdahD9GILBKfb6qkxkLrQaLjlUPTAYVtjrs78yM2x/47
4KElB0iryYl0/wiPgL/AlmXz7uxLaL2diMMxs0Dx6M/2OLuc5NF/1OVYm3z61PMO
m3WR5LpSLhl+0fXNWhn8ugb2+1KoS5kE3fj5tItQo05iifCHJPqDQsGH+tUtKSpa
cXpkatcnYGMN285J9Y0fkIkyF/hzQ7jSWpOGYdbhdQrqeWZ2iE9x6wQl1gpaepPl
uUsXQA+xtrn13k/c4LOsOxFwYIRKQ26ZIMApcQrAZQIDAQABo4ICyzCCAscwfQYI
KwYBBQUHAQEEcTBvMEwGCCsGAQUFBzAChkBodHRwOi8vd3d3LmFjY3YuZXMvZmls
ZWFkbWluL0FyY2hpdm9zL2NlcnRpZmljYWRvcy9yYWl6YWNjdjEuY3J0MB8GCCsG
AQUFBzABhhNodHRwOi8vb2NzcC5hY2N2LmVzMB0GA1UdDgQWBBTSh7Tj3zcnk1X2
VuqB5TbMjB4/vTAPBgNVHRMBAf8EBTADAQH/MB8GA1UdIwQYMBaAFNKHtOPfNyeT
Vf2W6oH1NsyMHj+9MIIBcwYDVR0gBIIBajCCAWYwggFiBgRVHSAAMIIBWDCCASIG
```

NOTE

If the OpenSSL version is too old, the configuration may not take effect. You can run the **yum update openssl -y** command to update the OpenSSL version.

- **macOS**
  a. Open the macOS startup console and select **Keychain Access**.
  b. Enter the password to log in to **Keychain Access**.
  c. Drag and drop the target root CA certificate into **Keychain Access**. The root CA certificate now is untrusted by the system.
  d. Right-click the root CA certificate to load its details.
  e. Click **Trust**, select **Always Trust** for **When using this certificate**, and click **Close**.
  f. Enter the password to make the configuration of the trusted root CA certificate take effect.
  g. View the root CA certificate on the Keychain Access window. If the certificate is trusted by the system, the root CA is successfully added to the trusted root CA store.

3.3.2 Installing a Private Certificate on a Client

This topic describes how to install a private certificate on the client.

Prerequisites

You have downloaded an issued private certificate. For details about how to download a certificate, see **Downloading a Private Certificate**.

Constraints

If the server needs to verify the client certificate, you need to add the root CA of the client certificate to the trusted root CA store on the server. For details, see **Trusting a Private Root CA**.

Procedure

This procedure uses Windows as an example.

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security** > **Cloud Certificate Management Service**. In the navigation pane, choose **Private Certificate Management** > **Private Certificate**.

Step 3 Locate the row containing the desired certificate. In the **Operation** column, click **Download**.

Step 4 Select the **IIS** tab and click **Download Certificate**.

Step 5 Decompress the downloaded certificate file package **client_iis.zip** to obtain certificate file **server.pfx** and private key password file **keystorePass.txt**.

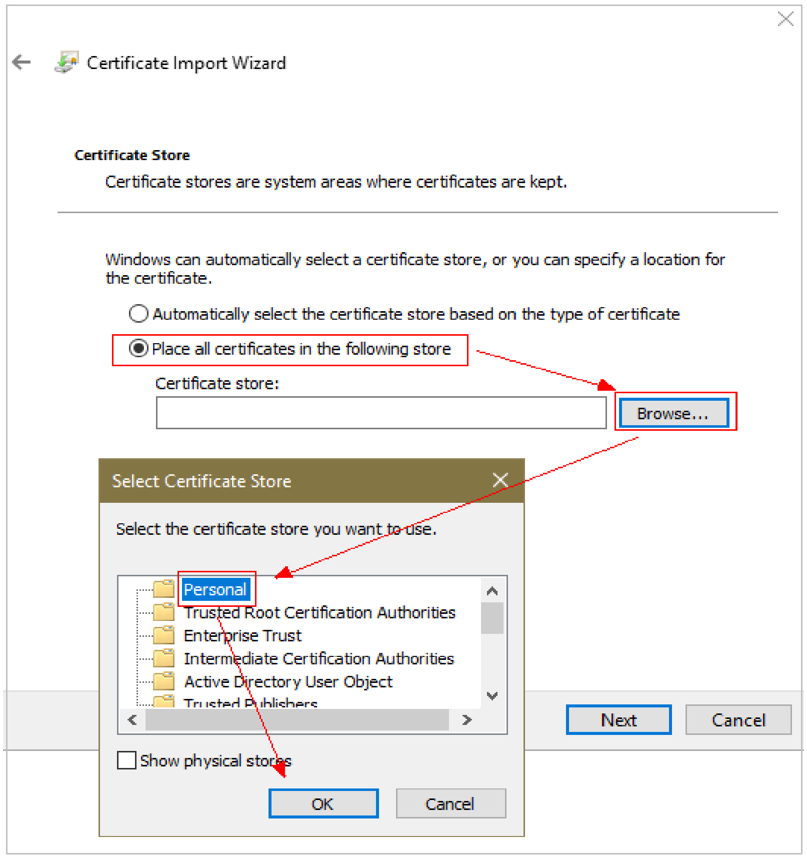
Step 6 Double-click certificate file **server.pfx**, select a certificate storage location based on its usage, and click **Next**.

Step 7 Confirm the name of the certificate file you want to import and click **Next**.

Step 8 Enter the password obtained from private key password file **keystorePass.txt** and click **Next**.

Step 9 Select **Place all certificates in the following store**, click **Browse**, select **Personal**, and click **OK**, as shown in **Figure 3-8**.

Figure 3-8 Storing a private certificate



Certificate Import Wizard

Certificate Store

Certificate stores are system areas where certificates are kept.

Windows can automatically select a certificate store, or you can specify a location for the certificate.

○ Automatically select the certificate store based on the type of certificate

● Place all certificates in the following store

Certificate store:

Select Certificate Store

Select the certificate store you want to use.

Personal
Trusted Root Certification Authorities
Enterprise Trust
Intermediate Certification Authorities
Active Directory User Object
Trusted Publishers

□ Show physical stores

Step 10 Click **Next** and **Finish**. The certificate is installed when a dialog box is displayed indicating that the certificate is imported successfully.

----End

3.3.3 Installing a Private Certificate on a Server

3.3.3.1 Installing a Private Certificate on a Tomcat Server

This topic describes how to install a private certificate on a Tomcat 7 server running a Linux OS.

NOTE

The installation procedure in this topic is for your reference only as the commands executed and configuration file modified during the installation may vary depending on OS types and server configurations.

Prerequisites

- The certificate has been issued.
- You have downloaded the private certificate in the format that is supported by Tomcat. For details, see **Downloading a Certificate**.
- You have used a system-generated CSR to apply for the certificate.

Constraints

- Before installing the certificate, enable port 443 on the server where the private certificate is installed and add port 443 to the security group. Otherwise, HTTPS cannot be enabled after the installation.
- A root CA must be added to the trusted client CA list so that all server certificates issued by the root CA can be trusted by the client. For details, see **Trusting a Private Root CA**.
- If a domain name maps to multiple servers, deploy the certificate on each server.
- A private certificate can only be installed on the server that maps to the domain name associated with the certificate. Otherwise, the web browser will display a message indicating that the domain name is insecure.

Procedure

The installation process is as follows (for Tomcat 7 servers):

Step 1: Obtaining Files → **Step 2: Creating a Directory** → **Step 3: Modifying Configuration Files** → **Step 4: Restarting the Tomcat** → **Verifying the Result**

Step 1: Obtaining Files

Decompress the downloaded Tomcat certificate file to obtain the certificate file **server.jks** and password file **keystorePass.txt**.

Step 2: Creating a Directory

Create a **cert** directory in the Tomcat installation directory, and copy the **server.jks** and **keystorePass.txt** files to the **cert** directory.

Step 3: Modifying Configuration Files

NOTICE

Before modifying the configuration file, back up the configuration file. You are advised to deploy the configuration file in the test environment and then configure it on the production environment to avoid service interruptions caused by incorrect configurations.

The installation process is as follows (for Tomcat 7 servers):

1. Find the following parameters in the **server.xml** file in the Tomcat installation directory **conf**:

```
<!--
   <Connector port="8443" protocol="org.apache.coyote.http11.Http11Protocol"
              maxThreads="150" SSLEnabled="true" scheme="https" secure="true"
              clientAuth="false" sslProtocol="TLS" />
   -->
```

2. Find the preceding parameters and delete the comment characters **<!- -** and **- ->**.
3. Add the following parameters. Change the values of the parameters according to **Table 3-7**.

```
keystoreFile="cert/server.jks"
keystorePass="Certificate key"
```

The complete example configuration is as follows. Modify other parameters based on your needs.

```
<Connector port="443" protocol="org.apache.coyote.http11.Http11Protocol"
           maxThreads="150" SSLEnabled="true" scheme="https" secure="true"
     keystoreFile="cert/server.jks"
   keystorePass="Certificate key"
     clientAuth="false" sslProtocol="TLS" />
```

NOTICE

Do not directly copy all configuration. Only parameters **keystoreFile** and **keystorePass** need to be added. Set other parameters based on site requirements.

Table 3-7 Parameter description (1)

Parameter	Description
port	Port number to be used on the server. You are advised to set the value to **443**.
protocol	HTTP protocol. Retain the default value.
keystoreFile	Path for storing the **server.jks** file. The value can be an absolute path or a relative path. Example: **cert/server.jks**
keystorePass	Password of **server.jks**. Set this parameter to the password provided in the **keystorePass.txt** file. **NOTICE** If the password contains **&**, replace it with **&amp;** to avoid configuration failure. An example command is provided as follows: If the password is **keystorePass="Ix6&APWgcHf72DMu"**, change it to **keystorePass="Ix6&amp;APWgcHf72DMu"**.
clientAuth	Whether to require all customers to show the security certificate and authenticate their identity. Retain the default value.

4. Find the following parameters in the **server.xml** file in the Tomcat installation directory **conf**:

```
<Host name="localhost"  appBase="webapps"
     unpackWARs="true" autoDeploy="true">
```

5. Change the value of **Host name** to the domain name bound to the certificate.

   The complete configuration is as follows (**www.domain.com** is used as an example):

```
<Host name="www.domain.com"  appBase="webapps"
     unpackWARs="true" autoDeploy="true">
```

6. Save the configuration file.

Step 4: Restarting the Tomcat

Run the **./shutdown.sh** command in the **bin** directory of Tomcat to stop the Tomcat service.

After 10 seconds, run the **./startup.sh** command to start the Tomcat service. If the process is automatically started by the daemon process, you do not need to manually start the process.

Verifying the Result

After the deployment succeeds, in the address bar of the browser, enter **https://***Domain name* and press **Enter**.

If a security padlock is displayed in the address bar of the browser, the certificate has been installed successfully.

- If the website still returns the warning tip, fix it by referring to **Why Does the Browser Still Consider the Website Insecure While the Website Has an SSL Certificate Deployed?**
- If the website cannot be accessed using the domain name, see **Why Is My Website Inaccessible by Domain Name After an SSL Certificate Is Installed?**

3.3.3.2 Installing a Private Certificate on an Nginx Server

This topic describes how to install a private certificate on an Nginx 1.7.8 server running CentOS 7.

NOTE

The installation procedure in this topic is for your reference only as the commands executed and configuration file modified during the installation may vary depending on OS types and server configurations.

Prerequisites

- The certificate has been issued.
- You have downloaded the private certificate in the format that is supported by Nginx. For details, see **Downloading a Certificate**.
- You have used a system-generated CSR to apply for the certificate.

Constraints

- Before installing the certificate, enable port 443 on the server where the private certificate is installed and add port 443 to the security group. Otherwise, HTTPS cannot be enabled after the installation.
- A root CA must be added to the trusted client CA list so that all server certificates issued by the root CA can be trusted by the client. For details, see **Trusting a Private Root CA**.
- If a domain name maps to multiple servers, deploy the certificate on each server.

- A private certificate can only be installed on the server that maps to the domain name associated with the certificate. Otherwise, the web browser will display a message indicating that the domain name is insecure.

Procedure

The installation process is as follows (for Nginx 1.7.8 servers running CentOS 7):

Step 1: Obtaining Files → **Step 2: Creating a Directory** → **Step 3: Modifying Configuration Files** → **Step 4: Verifying the Configuration** → **Step 5: Restarting Nginx** → **Verifying the Result**

Step 1: Obtaining Files

Decompress the downloaded certificate file on your local PC.

You will obtain certificate file **server.crt** and private key file **server.key**.

- The **server.crt** file contains two segments of certificate code: **-----BEGIN CERTIFICATE-----** and **-----END CERTIFICATE-----**, which are the server certificate and intermediate CA certificate respectively.
- **server.key** contains one segment of private key code: **-----BEGIN RSA PRIVATE KEY-----** and **-----END RSA PRIVATE KEY-----**.

Step 2: Creating a Directory

Create a **cert** directory in the Nginx installation directory, and copy the **server.key** and **server.crt** files to the **cert** directory.

Step 3: Modifying Configuration Files

NOTICE

Before modifying the configuration file, back up the configuration file. You are advised to deploy the configuration file in the test environment and then configure it on the production environment to avoid service interruptions caused by incorrect configurations.

Configure the **nginx.conf** file in the **conf** directory of Nginx.

1. Find the following configuration:

```
#server {
#    listen       443 ssl;
#    server_name  localhost;
#    ssl_certificate      cert.pem;
#    ssl_certificate_key  cert.key;
#    ssl_session_cache    shared:SSL:1m;
#    ssl_session_timeout  5m;
#    ssl_ciphers  HIGH:!aNULL:!MD5;
#    ssl_prefer_server_ciphers  on;
#    location / {
#        root   html;
#        index  index.html index.htm;
#    }
#}
```

2. Delete comment tags (#) at the beginning of the lines.

```
server {
            listen              443 ssl;
            server_name         localhost;
            ssl_certificate     cert.pem;
            ssl_certificate_key cert.key;
            ssl_session_cache   shared:SSL:1m;
            ssl_session_timeout 5m;
            ssl_ciphers         HIGH:!aNULL:!MD5;
            ssl_prefer_server_ciphers  on;
            location / {
                      root     html;
                      index    index.html index.htm;
                       }
}
```

3. Modify the following parameters according to **Table 3-8**.

```
ssl_certificate          cert/server.crt;
ssl_certificate_key      cert/server.key;
```

The complete configuration is as follows. Modify other parameters based on your needs.

```
server {
       listen       443 ssl; # Set the default HTTPS port to 443. If the default HTTPS port is not
configured, Nginx may fail to start.
       server_name  www.domain.com; #Replace www.domain.com with the domain name associated
with your certificate.
       ssl_certificate      cert/server.crt; #Replace cert/server.crt with the path of the certificate file.
       ssl_certificate_key  cert/server.key; #Replace cert/server.key with the path of the private key.
       ssl_session_cache    shared:SSL:1m;
       ssl_session_timeout  5m;
       ssl_ciphers  HIGH:!aNULL:!MD5; #Encryption suite
       ssl_prefer_server_ciphers  on;
       location / {
           root   html; #Site directory
           index  index.html index.htm; #Add attributes.
                 }
}
```

NOTICE

Do not directly copy all configuration. Only attributes starting with **ssl** are directly related to the certificate configuration. Modify other parameters based on site requirements.

Table 3-8 Parameters

Parameter	Description
listen	SSL access port number. Set the value to **443**. Set the default HTTPS port to 443. If the default HTTPS port is not configured, Nginx may fail to start.
server_name	Domain name which the certificate is used for. Example: www.domain.com
ssl_certificate	Certificate file **server.crt** Set the value to the path of the **server.crt** file. The path cannot contain Chinese characters. An example of the path is **cert/server.crt**.

Parameter	Description
ssl_certificate_key	Private key file **server.key** Set the value to the path of the **server.key** file. The path cannot contain Chinese characters. An example of the path is **cert/server.key**.

4. Save the configuration file.

Step 4: Verifying the Configuration

Go to the execution directory of Nginx and run the following command:

sbin/nginx -t

If the following information is displayed, the configuration is correct.

```
nginx.conf syntax is ok
nginx.conf test is successful
```

Step 5: Restarting Nginx

Run the following command to restart Nginx to make the configuration take effect:

cd /usr/local/nginx/sbin

./nginx -s reload

Verifying the Result

After the deployment succeeds, in the address bar of the browser, enter **https://** *Domain name* and press **Enter**.

If a security padlock is displayed in the address bar of the browser, the certificate has been installed successfully.

- If the website still returns the warning tip, fix it by referring to **Why Does the Browser Still Consider the Website Insecure While the Website Has an SSL Certificate Deployed?**
- If the website cannot be accessed using the domain name, see **Why Is My Website Inaccessible by Domain Name After an SSL Certificate Is Installed?**

3.3.3.3 Installing a Private Certificate on an Apache Server

This topic describes how to install a private certificate on an Apache 2.4.6 server running CentOS 7.

NOTE

The installation procedure in this topic is for your reference only as the commands executed and configuration file modified during the installation may vary depending on OS types and server configurations.

Prerequisites

- The certificate has been issued.
- You have downloaded the private certificate in the format that is supported by Apache. For details, see **Downloading a Certificate**.
- You have used a system-generated CSR to apply for the certificate.

Constraints

- Before installing the certificate, enable port 443 on the server where the private certificate is installed and add port 443 to the security group. Otherwise, HTTPS cannot be enabled after the installation.
- A root CA must be added to the trusted client CA list so that all server certificates issued by the root CA can be trusted by the client. For details, see **Trusting a Private Root CA**.
- If a domain name maps to multiple servers, deploy the certificate on each server.
- A private certificate can only be installed on the server that maps to the domain name associated with the certificate. Otherwise, the web browser will display a message indicating that the domain name is insecure.

Procedure

The installation process is as follows (for Apache 2.4.6 servers running CentOS 7):

Step 1: Obtaining Files → **Step 2: Creating a Directory** → **Step 3: Modifying Configuration Files** → **Step 4: Restarting Apache** → **Step 5: Verifying the Result**

Step 1: Obtaining Files

Decompress the downloaded certificate file on your local PC.

You will obtain certificate files **ca.crt** and **server.crt** and private key file **server.key**.

- **ca.crt** contains one segment of intermediate CA certificate code: **-----BEGIN CERTIFICATE-----** and **-----END CERTIFICATE-----**.
- **server.crt** contains one segment of server certificate code: **-----BEGIN CERTIFICATE-----** and **-----END CERTIFICATE-----**.
- **server.key** contains one segment of private key code: **-----BEGIN RSA PRIVATE KEY-----** and **-----END RSA PRIVATE KEY-----**.

Step 2: Creating a Directory

Create a **cert** directory in the Apache installation directory, and copy the **server.key**, **server.crt**, and **ca.crt** files to the **cert** directory.

Step 3: Modifying Configuration Files

NOTICE

Before modifying the configuration file, back up the configuration file. You are advised to deploy the configuration file in the test environment and then configure it on the production environment to avoid service interruptions caused by incorrect configurations.

1. Open the **conf.d/ssl.conf** file in the Apache root directory.
2. Configure the domain name associated with the certificate.

   Find and modify the following parameter:

   ```
   ServerName www.example.com:443
   ```

   The complete configuration is as follows (**www.domain.com** is used as an example):

   ```
   ServerName www.domain.com:443 #Replace www.domain.com with the domain name of your server.
   ```

3. Configure the public key for the certificate.

   Find and modify the following parameter:

   ```
   SSLCertificateFile "${SRVROOT}/conf/server.crt"
   ```

   Set the value to the path of the **server.crt** file. The path cannot contain Chinese characters. An example of the path is **cert/server.crt**.

   The complete configuration is as follows:

   ```
   SSLCertificateFile "cert/server.crt"
   ```

4. Configure the private key for the certificate.

   Find and modify the following parameter:

   ```
   SSLCertificateKeyFile "${SRVROOT}/conf/server.key"
   ```

   Set the value to the path of the **server.key** file. The path cannot contain Chinese characters. An example of the path is **cert/server.key**.

   The complete configuration is as follows:

   ```
   SSLCertificateKeyFile "cert/server.key"
   ```

5. Configure the certificate chain.

   Find and modify the following parameter:

   ```
   #SSLCertificateChainFile "${SRVROOT}/conf/server-ca.crt"
   ```

   Delete the comment tag **#** at the beginning of the line. Set this parameter to the path of the **ca.crt** file. The path cannot contain Chinese characters. An example of the path is **cert/ca.crt**.

   The complete configuration is as follows:

   ```
   SSLCertificateChainFile "cert/ca.crt"
   ```

6. Save the **ssl.conf** file and exit.

Step 4: Restarting Apache

Restart the Apache service for the configuration to take effect:

1. Run the **service named stop** command to stop the Apache server.
2. Run the **service httpd start** command to start the Apache server.

Verifying the Result

After the deployment succeeds, in the address bar of the browser, enter **https://** *Domain name* and press **Enter**.

If a security padlock is displayed in the address bar of the browser, the certificate has been installed successfully.

- If the website still returns the warning tip, fix it by referring to **Why Does the Browser Still Consider the Website Insecure While the Website Has an SSL Certificate Deployed?**
- If the website cannot be accessed using the domain name, see **Why Is My Website Inaccessible by Domain Name After an SSL Certificate Is Installed?**

3.3.3.4 Installing a Private Certificate on an IIS Server

This topic describes how to install a private certificate on an IIS server.

NOTE

The installation procedure in this topic is for your reference only as the commands executed and configuration file modified during the installation may vary depending on OS types and server configurations.

Prerequisites

- The certificate has been issued.
- You have downloaded the private certificate in the format that is supported by IIS. For details, see **Downloading a Certificate**.
- You have used a system-generated CSR to apply for the certificate.

Constraints

- Before installing the certificate, enable port 443 on the server where the private certificate is installed and add port 443 to the security group. Otherwise, HTTPS cannot be enabled after the installation.
- A root CA must be added to the trusted client CA list so that all server certificates issued by the root CA can be trusted by the client. For details, see **Trusting a Private Root CA**.
- If a domain name maps to multiple servers, deploy the certificate on each server.
- A private certificate can only be installed on the server that maps to the domain name associated with the certificate. Otherwise, the web browser will display a message indicating that the domain name is insecure.

Procedure

To install a private certificate on an IIS server, perform the following steps:

Step 1: Obtaining Files → **Step 2: Configuring IIS** → **Step 3: Verifying the Result**

Step 1: Obtaining Files

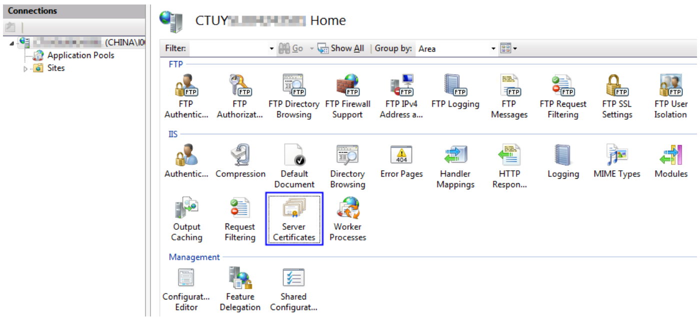
Decompress the downloaded certificate file on your local PC.

You will obtain certificate file **server.pfx** and password file **keystorePass.txt**.

Step 2: Configuring IIS

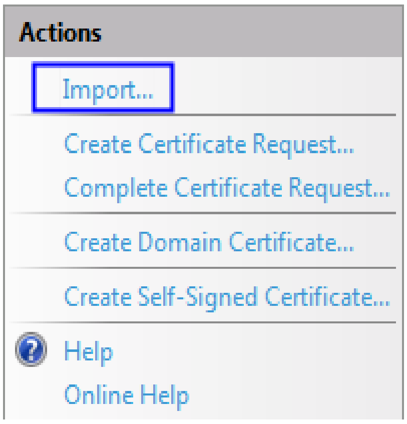
1. Install IIS as instructed by IIS guides.
2. Open the IIS management console, double-click **Server Certificates**.

Figure 3-9 Double-clicking Server Certificates



3. In the displayed dialog box, click **Import**.

Figure 3-10 Import

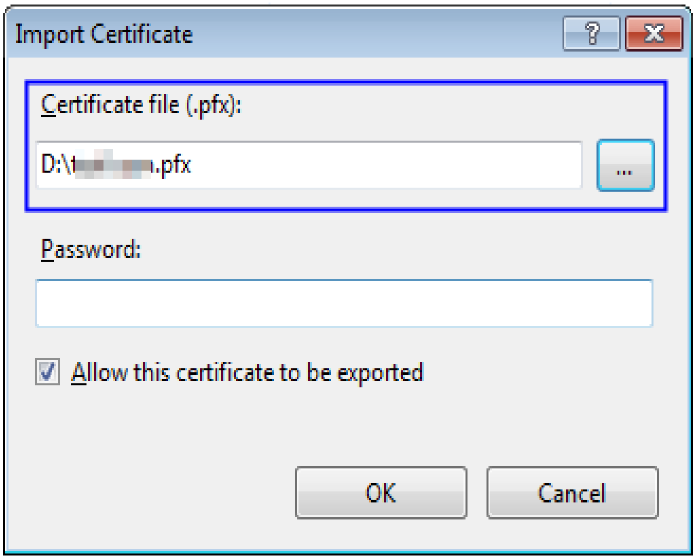

Actions
Import...
Create Certificate Request...
Complete Certificate Request...
Create Domain Certificate...
Create Self-Signed Certificate...
Help
Online Help

4. Import the **server.pfx** certificate file. Then click **OK**.

NOTE

In the **Password** box, enter the password provided in the **keystorePass.txt** file.

Figure 3-11 Importing a PFX certificate file


Import Certificate

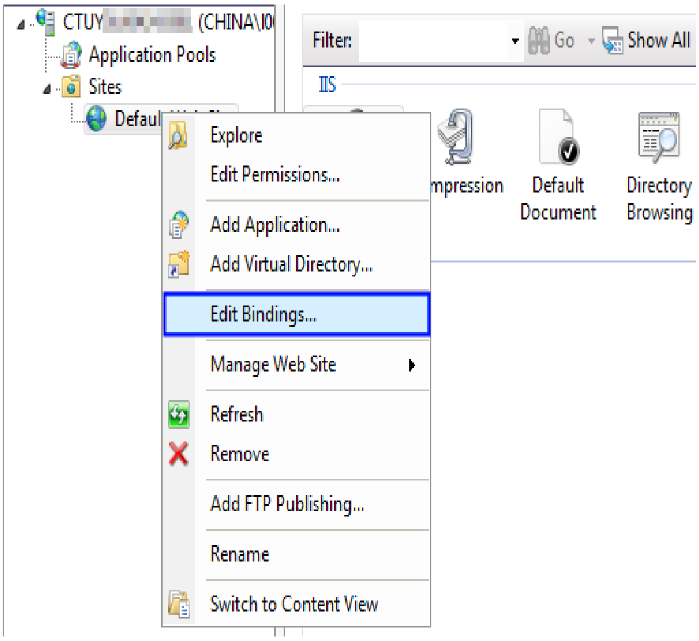
Certificate file (.pfx): D:\[redacted].pfx

Password:

☑ Allow this certificate to be exported

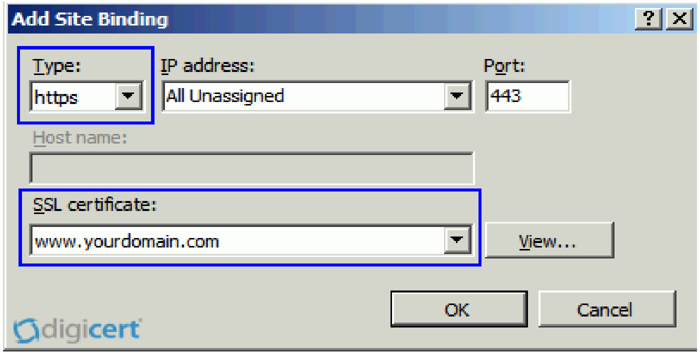
5. Right-click the target site (the default site is used as an example). Choose **Edit Bindings** from the shortcut menu.

Figure 3-12 Choosing Edit Bindings



6. In the dialog box that is displayed, click **Add**. Then enter the following information.

Figure 3-13 Binding a website



Add Site Binding

Type: https

IP address: All Unassigned

Port: 443

Host name:

SSL certificate: www.yourdomain.com

- **Type**: Select **https**.
- **Port**: Retain the default port **443**.
- **SSL certificate**: Select the certificate imported in **4**.

7. Click **OK**.

Verifying the Result

After the deployment succeeds, in the address bar of the browser, enter **https://** *Domain name* and press **Enter**.

If a security padlock is displayed in the address bar of the browser, the certificate has been installed successfully.

- If the website still returns the warning tip, fix it by referring to **Why Does the Browser Still Consider the Website Insecure While the Website Has an SSL Certificate Deployed?**
- If the website cannot be accessed using the domain name, see **Why Is My Website Inaccessible by Domain Name After an SSL Certificate Is Installed?**

3.3.3.5 Installing a Private Certificate on a WebLogic Server

WebLogic is a Java EE application server, used to develop, integrate, deploy, and manage large-scale distributed Web apps, network apps, and database apps. It applies dynamic functions of Java and security of the Java Enterprise standard to the development, integration, deployment, and management of large-scale network applications.

Currently, WebLogic 10.3.1 and later versions support SSL certificates of all mainstream brands. Versions earlier than WebLogic 10.3.1 do not support SSL certificates of brands.

This topic describes how to install a private certificate on a Weblogic server.

NOTE

The installation procedure in this topic is for your reference only as the commands executed and configuration file modified during the installation may vary depending on OS types and server configurations.

Prerequisites

- The certificate is in the **Issued** status.
- You have downloaded the private certificate in the format that is supported by Tomcat. For details, see **Downloading a Certificate**.
- You have used a system-generated CSR to apply for the certificate.
- The JDK has been installed.

  The JDK has been installed after WebLogic installation is complete. If the JDK has not been installed, install the **Java SE Development Kit (JDK)**.

Constraints

- Before installing the certificate, enable port 443 on the server where the private certificate is installed and add port 443 to the security group. Otherwise, HTTPS cannot be enabled after the installation.
- A root CA must be added to the trusted client CA list so that all server certificates issued by the root CA can be trusted by the client. For details, see **Trusting a Private Root CA**.
- If a domain name maps to multiple servers, deploy the certificate on each server.
- A private certificate can only be installed on the server that maps to the domain name associated with the certificate. Otherwise, the web browser will display a message indicating that the domain name is insecure.

Procedure

To install a private certificate on a WebLogic server, perform the following steps:

Step 1: Obtaining Files → **Step 2: Configuring WebLogic** → **Verifying the Result**

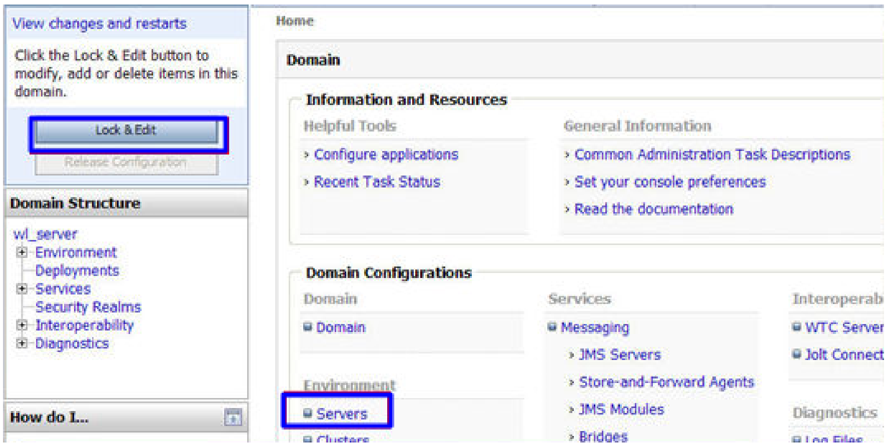
Step 1: Obtaining Files

Decompress the downloaded Tomcat certificate file to obtain the certificate file **server.jks** and password file **keystorePass.txt**.

Step 2: Configuring WebLogic

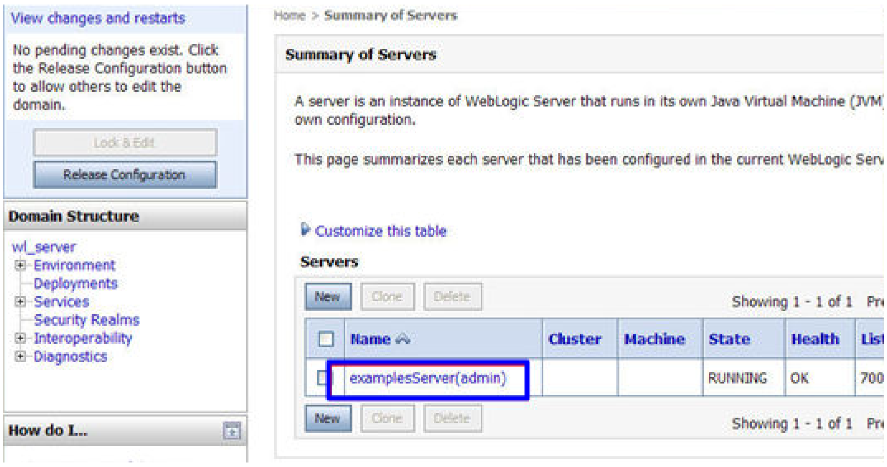
1. Log in to the management console of the WebLogic server.
2. Click **Lock & Edit** in the upper left corner of the page to unlock the configuration.
3. Click **Servers** in **Domain Configurations**.

Figure 3-14 Server



4. In the server list, select the server for which you want to configure the server certificate. The server configuration page is displayed.

Figure 3-15 Target server


View changes and restarts
No pending changes exist. Click the Release Configuration button to allow others to edit the domain.
Lock & Edit
Release Configuration
Domain Structure
wl_server
Environment
Deployments
Services
Security Realms
Interoperability
Diagnostics
How do I...
Home > Summary of Servers
Summary of Servers
A server is an instance of WebLogic Server that runs in its own Java Virtual Machine (JVM
own configuration.
This page summarizes each server that has been configured in the current WebLogic Serv
Customize this table
Servers
New
Clone
Delete
Showing 1 - 1 of 1 Pre

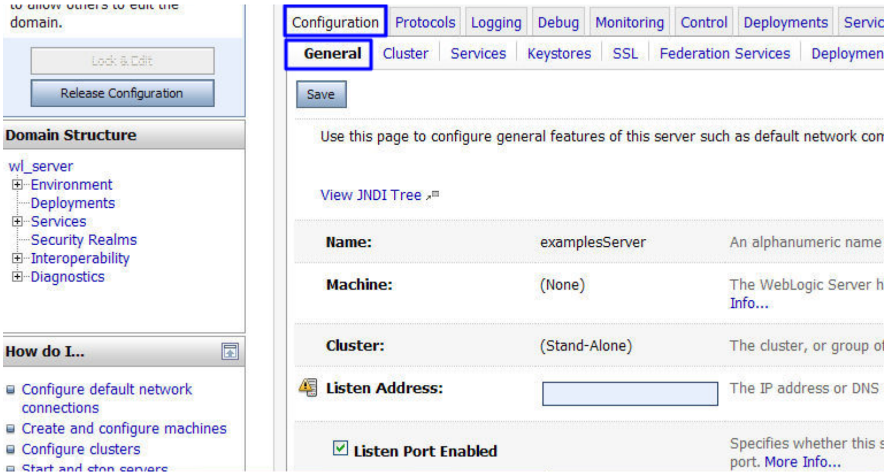
□	Name	Cluster	Machine	State	Health	List
□	examplesServer(admin)			RUNNING	OK	700

5. Modify the HTTPS port.

   On the server configuration page, click the **General** tab and configure whether to enable HTTP and HTTPS and the access port number.

   Select **Listen SSL Port Enabled** and change the port number to **443**.

Figure 3-16 port



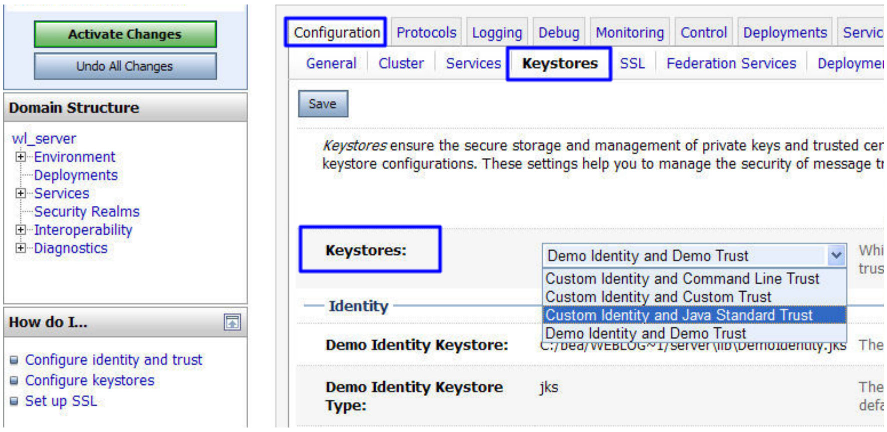
Use this page to configure general features of this server such as default network con

Name:	examplesServer	An alphanumeric name
Machine:	(None)	The WebLogic Server h Info...
Cluster:	(Stand-Alone)	The cluster, or group of
Listen Address:		The IP address or DNS
☑ **Listen Port Enabled**		Specifies whether this s port. More Info...

6. Configure an authentication mode and a key.

   a. On the server configuration page, click the **Keystores** tab and configure an authentication mode.

   Figure 3-17 Authentication mode



Keystores ensure the secure storage and management of private keys and trusted cer keystore configurations. These settings help you to manage the security of message t

Keystores: Demo Identity and Demo Trust — Whi trus

- Custom Identity and Command Line Trust
- Custom Identity and Custom Trust
- Custom Identity and Java Standard Trust
- Demo Identity and Demo Trust

Demo Identity Keystore: C:/bea/WEBLOG~1/server\lib\DemoIdentity.jks — The

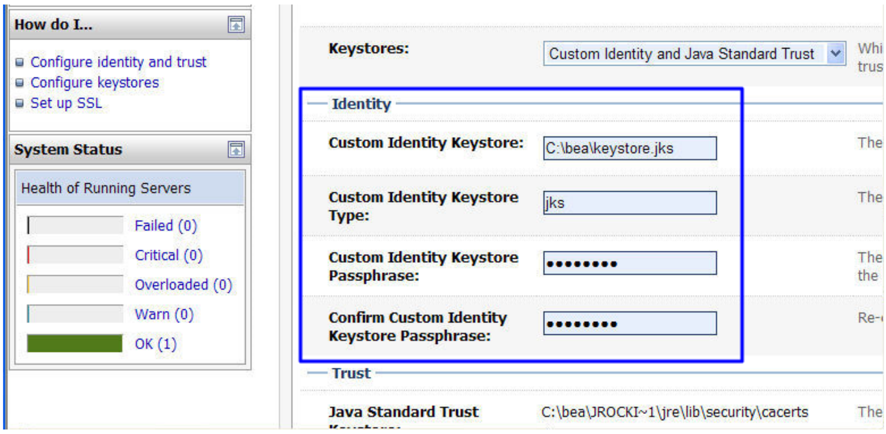
Demo Identity Keystore Type: jks — The defa

   - Select **Custom Identity and Java Standard Trust** for server authentication.
   - Select **Custom Identity and Custom Trust** for bidirectional authentication.

   b. Configure a key in the **Identity** area.

   Configure the path for storing the keystore file **server.jks** on the server and enter the password of the keystore file.

Figure 3-18 Key



Keystores: Custom Identity and Java Standard Trust

Identity

Custom Identity Keystore: C:\bea\keystore.jks

Custom Identity Keystore Type: jks

Custom Identity Keystore Passphrase: ••••••••

Confirm Custom Identity Keystore Passphrase: ••••••••

Trust

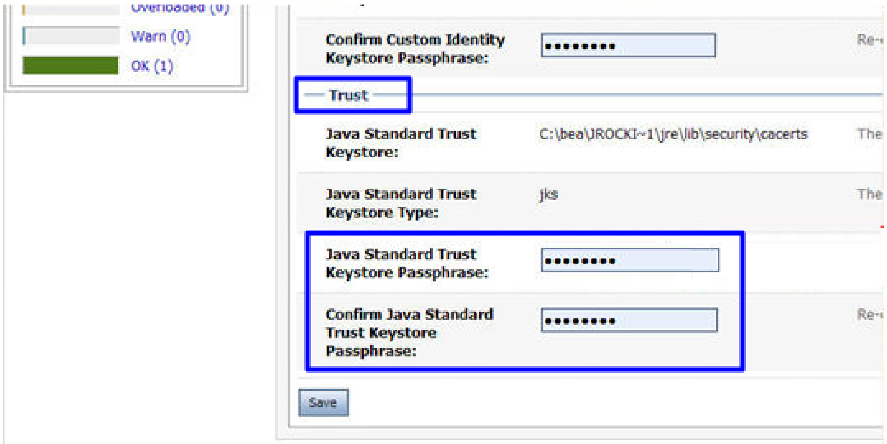
Java Standard Trust Keystore: C:\bea\JROCKI~1\jre\lib\security\cacerts

- **Custom Identity Keystore**: Enter the path for storing the .jks file. Example: C:\bea\server.jks
- **Custom Identity Keystore Type**: Set the file format to **jks**.
- **Custom Identity Keystore Passphrase**: Enter the certificate password, that is, the password in **keystorePass.txt**.
- **Confirm Custom Identity Keystore Passphrase**: Re-enter the certificate password.

c. In unidirectional authentication, configure the default trust store file **cacerts** of the JRE.

The default password of **cacerts** is **changeit**.

Figure 3-19 Trust store file



Confirm Custom Identity Keystore Passphrase: ••••••••

Trust

Java Standard Trust Keystore: C:\bea\JROCKI~1\jre\lib\security\cacerts

Java Standard Trust Keystore Type: jks

Java Standard Trust Keystore Passphrase: ••••••••

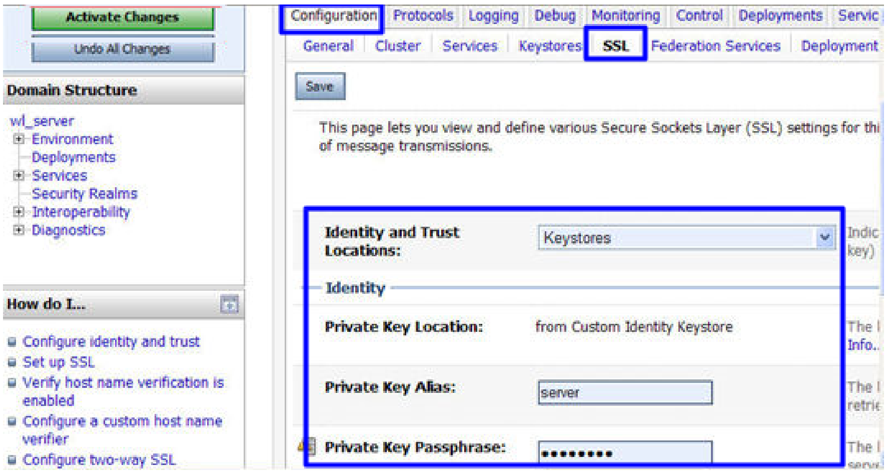
Confirm Java Standard Trust Keystore Passphrase: ••••••••

- **Java Standard Trust Keystore Passphrase**: Enter the default password **changeit**.
- **Confirm Java Standard Trust Keystore Passphrase**: Re-enter the default password.

7. Configure the private key alias of the server certificate.

On the server configuration page, click the **SSL** tab and set the following parameters:

Figure 3-20 Private key



This page lets you view and define various Secure Sockets Layer (SSL) settings for thi of message transmissions.

Identity and Trust Locations: Keystores

Private Key Location: from Custom Identity Keystore

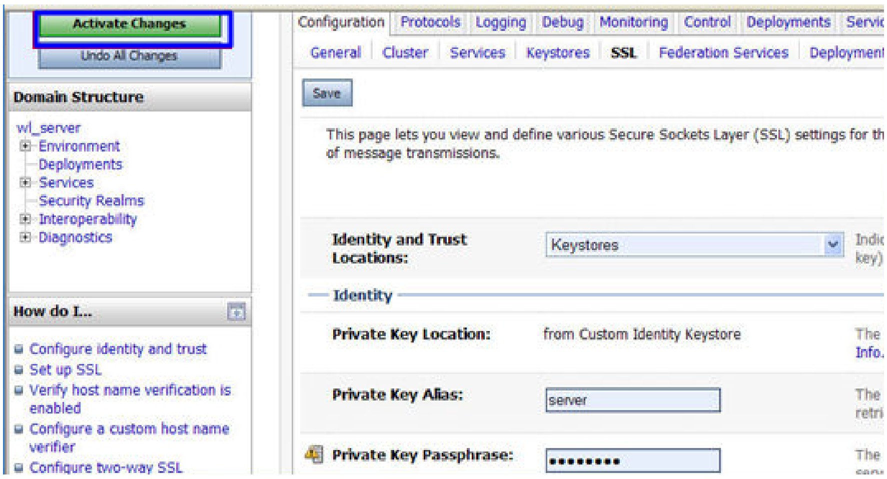
Private Key Alias: server

Private Key Passphrase: ••••••••

- **Identity and Trust Locations**: Select **Keystores**.
- **Private Key Alias**: Configure a private key alias in the private key library. You can run the **keystool -lis**t command to view the private key alias.
- **Private Key Passphrase**: Enter the private key protection password. Generally, the private key protection password is the same as the keystore file protection password.
- **Confirm Private Key Passphrase**: Enter the private key protection password again.

8. Click **Active Changes** to save the settings.

Figure 3-21 Saving the settings



This page lets you view and define various Secure Sockets Layer (SSL) settings for th of message transmissions.

Identity and Trust Locations: Keystores

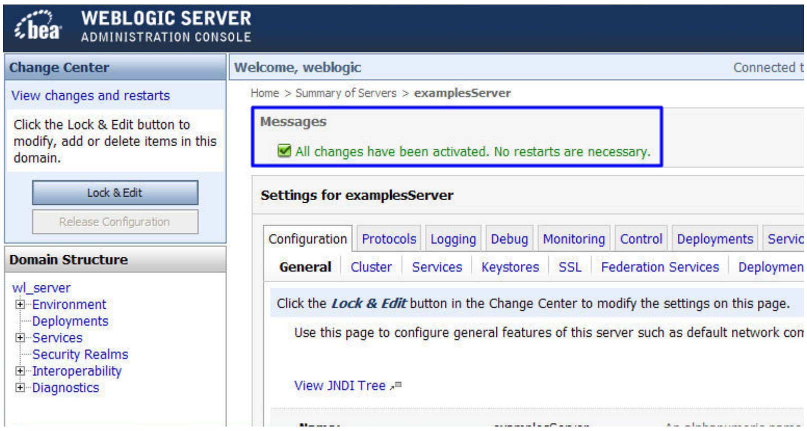
Private Key Location: from Custom Identity Keystore

Private Key Alias: server

Private Key Passphrase: ••••••••

9. (Optional) If the system prompts you to restart the WebLogic server, restart the WebLogic server for the settings to take effect. As shown in **Figure 3-22**, you do not need to restart the WebLogic server.

Figure 3-22 Message displayed



Click the Lock & Edit button to modify, add or delete items in this domain.

Messages

✓ All changes have been activated. No restarts are necessary.

Settings for examplesServer

Click the ***Lock & Edit*** button in the Change Center to modify the settings on this page.

Use this page to configure general features of this server such as default network con

Verifying the Result

After the deployment succeeds, in the address bar of the browser, enter **https://***Domain name* and press **Enter**.

If a security padlock is displayed in the address bar of the browser, the certificate has been installed successfully.

- If the website still returns the warning tip, fix it by referring to **Why Does the Browser Still Consider the Website Insecure While the Website Has an SSL Certificate Deployed?**
- If the website cannot be accessed using the domain name, see **Why Is My Website Inaccessible by Domain Name After an SSL Certificate Is Installed?**

3.3.3.6 Installing a Private Certificate on a Resin Server

This topic describes how to install a private certificate on a Resin server.

NOTE

The installation procedure in this topic is for your reference only as the commands executed and configuration file modified during the installation may vary depending on OS types and server configurations.

Prerequisites

- The certificate is in the **Issued** status.
- You have downloaded the private certificate in the format that is supported by Tomcat. For details, see **Downloading a Certificate**.
- You have used a system-generated CSR to apply for the certificate.

Constraints

- Before installing the certificate, enable port 443 on the server where the private certificate is installed and add port 443 to the security group. Otherwise, HTTPS cannot be enabled after the installation.

- A root CA must be added to the trusted client CA list so that all server certificates issued by the root CA can be trusted by the client. For details, see **Trusting a Private Root CA**.
- If a domain name maps to multiple servers, deploy the certificate on each server.
- A private certificate can only be installed on the server that maps to the domain name associated with the certificate. Otherwise, the web browser will display a message indicating that the domain name is insecure.

Procedure

To install a private certificate on a Resin server, perform the following steps:

Step 1: Obtaining Files → **Step 2: Configuring Resin** → **Verifying the Result**

Step 1: Obtaining Files

Decompress the downloaded Tomcat certificate file to obtain the certificate file **server.jks** and password file **keystorePass.txt**.

Step 2: Configuring Resin

NOTICE

Before modifying the configuration file, back up the configuration file. You are advised to deploy the configuration file in the test environment and then configure it on the production environment to avoid service interruptions caused by incorrect configurations.

1. (Optional) Install Resin.

   If you have installed Resin, skip this step.

   a. Log in to the **Resin** official website and download the appropriate application packages for your operating system.

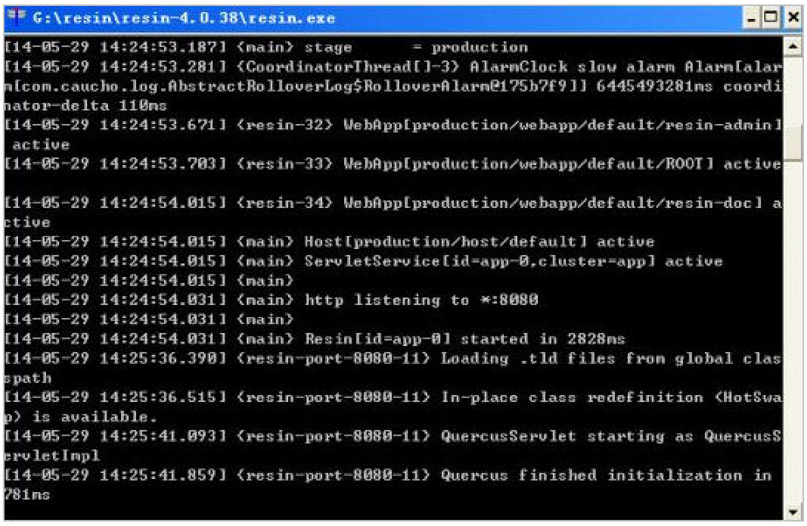
      The following uses **Resin-4.0.38** for Windows as an example.

   b. Decompress the downloaded Resin software package.

   c. Access the root directory of Resin-4.0.38 and find the **resin.exe** file.

   d. Run the **resin.exe** file. During the execution, the command prompt window **Figure 3-23** will display.

Figure 3-23 Information dialog box



G:\resin\resin-4.0.38\resin.exe

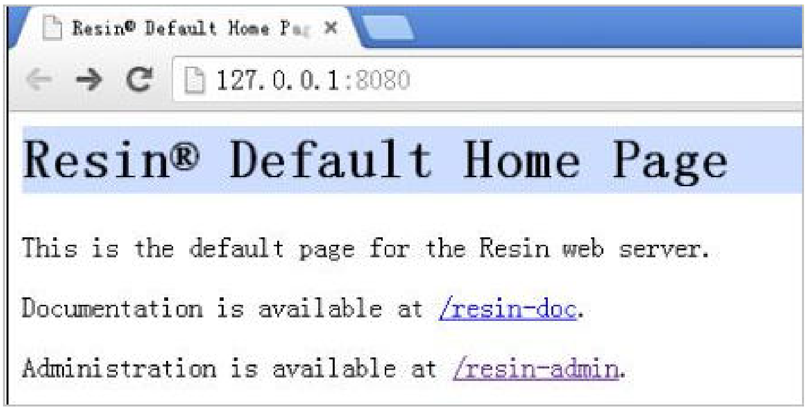
```
[14-05-29 14:24:53.187] {main} stage       = production
[14-05-29 14:24:53.281] {CoordinatorThread[]-3} AlarmClock slow alarm Alarm[alar
m[com.caucho.log.AbstractRolloverLog$RolloverAlarm@175b7f9]] 6445493281ms coordi
nator-delta 110ms
[14-05-29 14:24:53.671] {resin-32} WebApp[production/webapp/default/resin-admin]
 active
[14-05-29 14:24:53.703] {resin-33} WebApp[production/webapp/default/ROOT] active

[14-05-29 14:24:54.015] {resin-34} WebApp[production/webapp/default/resin-doc] a
ctive
[14-05-29 14:24:54.015] {main} Host[production/host/default] active
[14-05-29 14:24:54.015] {main} ServletService[id=app-0,cluster=app] active
[14-05-29 14:24:54.015] {main}
[14-05-29 14:24:54.031] {main} http listening to *:8080
[14-05-29 14:24:54.031] {main}
[14-05-29 14:24:54.031] {main} Resin[id=app-0] started in 2828ms
[14-05-29 14:25:36.390] {resin-port-8080-11} Loading .tld files from global clas
spath
[14-05-29 14:25:36.515] {resin-port-8080-11} In-place class redefinition (HotSwa
p) is available.
[14-05-29 14:25:41.093] {resin-port-8080-11} QuercusServlet starting as QuercusS
ervletImpl
[14-05-29 14:25:41.859] {resin-port-8080-11} Quercus finished initialization in
781ms
```

e. After the resin.exe file is executed. Start the Microsoft Internet Explorer, enter the default address **http://127.0.0.1:8080** of Resin in the address bar, and then press **Enter**.

   If the information similar to **Figure 3-24** is displayed, Resin is installed successfully.

Figure 3-24 Logging In to Resin



Resin® Default Home Page

This is the default page for the Resin web server.

Documentation is available at /resin-doc.

Administration is available at /resin-admin.

2. Modify the configuration file.

   a. Find the following parameters in the **Resin.properties** configuration file in the Resin installation directory (the configuration file may be **resin.xml** for different Resin versions):

```
# specifies the --server in the config file
# home_server : app-0

# Set HTTP and HTTPS bind address
# http_address : *

# Set HTTP and HTTPS ports.
# Use overrides for individual server control, for example: app-0.http : 8081
app.http          : 8080
# app.https         : 8443

web.http          : 8080
# web.https         : 8443
```

b. Delete the comment symbol (#) before **app.https** and **web.https**. Then modify port **8443** to **443**. After the modification:

app.https and **web.https**: Port to be used on the server. You are advised to set the value to **443**.

```
# specifies the --server in the config file
# home_server : app-0

# Set HTTP and HTTPS bind address
# http_address : *

# Set HTTP and HTTPS ports.
# Use overrides for individual server control, for example: app-0.http : 8081
app.http          : 8080
app.https          : 443

web.http          : 8080
web.https          : 443
```

c. Find the following parameters and delete the comment symbol (#) before **jsse_keystore_type**, **jsse_keystore_file**, and **jsse_keystore_password**.

```
# JSSE certificate configuration
# Keys are typically stored in the resin configuration directory.
jsse_keystore_tye : jks
jsse_keystore_file : cert/server.jks
jsse_keystore_password: certificate password
```

d. Modify certificate-related parameters. For details, see **Table 3-9**.

```
# JSSE certificate configuration
# Keys are typically stored in the resin configuration directory.
jsse_keystore_tye : jks
jsse_keystore_file : cert/server.jks
jsse_keystore_password: certificate password
```

Table 3-9 Description

Parameter	Description
jsse_keystore_tye	Type of the Keystore file. Generally, this parameter is set to **jks**.
jsse_keystore_file	Path for storing the **server.jks** file. The value can be an absolute path or a relative path. Example: **cert/server.jks**
jsse_keystore_password	Password of **server.jks**. Set this parameter to the password provided in the **keystorePass.txt** file. **NOTICE** If the password contains **&**, replace it with **&amp;** to avoid configuration failure. An example command is provided as follows: If the password is **keystorePass="Ix6&APWgcHf72DMu"**, change it to **keystorePass="Ix6&amp;APWgcHf72DMu"**.

e. Save the configuration file.

3. Restart Resin.

Verifying the Result

After the deployment succeeds, in the address bar of the browser, enter **https://** *Domain name* and press **Enter**.

If a security padlock is displayed in the address bar of the browser, the certificate has been installed successfully.

- If the website still returns the warning tip, fix it by referring to **Why Does the Browser Still Consider the Website Insecure While the Website Has an SSL Certificate Deployed?**
- If the website cannot be accessed using the domain name, see **Why Is My Website Inaccessible by Domain Name After an SSL Certificate Is Installed?**

3.4 Revoking a Private Certificate

If a private certificate is no longer needed or its private key is lost before it expires, you can revoke it on the console. If a private certificate is revoked, it is no longer trusted within the organization.

If a private certificate is revoked, the billing stops.

The following describes how to revoke a private certificate.

Prerequisites

The private certificate is in the **Issued** state.

Constraints

- After you apply for revoking a private certificate, your application cannot be withdrawn. Exercise caution when performing this operation.
- All its records will be cleared and cannot be recovered, including private CA records. Therefore, exercise caution when performing this operation.

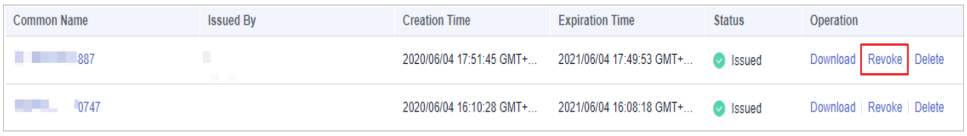
Procedure

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. In the navigation pane on the left, choose **Private Certificate Management** > **Private Certificate**. The **Private Certificate** page is displayed.

Step 3 Locate the row of the desired private certificate and click **Revoke** in the **Operation** column.

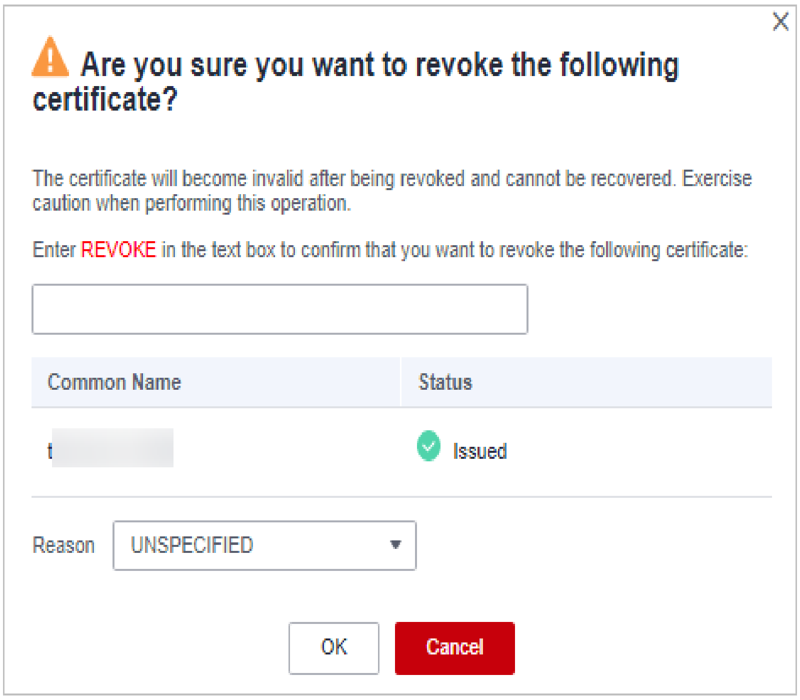
Figure 3-25 Revoking a private certificate



Common Name	Issued By	Creation Time	Expiration Time	Status	Operation
[redacted]887	[redacted]	2020/06/04 17:51:45 GMT+...	2021/06/04 17:49:53 GMT+...	✓ Issued	Download Revoke Delete
[redacted]0747		2020/06/04 16:10:28 GMT+...	2021/06/04 16:08:18 GMT+...	✓ Issued	Download | Revoke | Delete

Step 4 In the displayed dialog box, enter **REVOKE** and select the revocation reason to confirm the revocation. The default revocation reason is in the **UNSPECIFIED** field. Table 3-10 describes the revocation reasons you can select.

Figure 3-26 Revoke Certificate



Are you sure you want to revoke the following certificate?

The certificate will become invalid after being revoked and cannot be recovered. Exercise caution when performing this operation.

Enter REVOKE in the text box to confirm that you want to revoke the following certificate:

Common Name	Status
t[redacted]	Issued

Reason: UNSPECIFIED

Table 3-10 Revocation reasons and meaning

Reason for Revocation	Reason Code in RFC 5280	Description
UNSPECIFIED	0	Default value. No reason is specified for revocation.
KEY_COMPROMISE	1	The certificate key material has been leaked.
CERTIFICATE_AUTHORITY_COMPROMISE	2	Key materials of the CA have been leaked in the certificate chain.
AFFILIATION_CHANGED	3	The subject or other information in the certificate has been changed.
SUPERSEDED	4	The certificate has been replaced.

Reason for Revocation	Reason Code in RFC 5280	Description
CESSATION_OF_OPERATION	5	The entity in the certificate or certificate chain has ceased to operate.
CERTIFICATE_HOLD	6	The certificate should not be considered valid currently and may take effect in the future.
PRIVILEGE_WITHDRAWN	9	The certificate no longer has the right to declare its listed attributes.
ATTRIBUTE_AUTHORITY_COMPROMISE	10	The authority that warrants the attributes of the certificate may have been compromised.

Step 5 Click **OK**.

When "Certificate xxx revoked successfully" is displayed in the upper right corner of the page, and the private certificate status changes to **Revoked**, the private certificate is revoked successfully.

----End

3.5 Viewing Details of a Private Certificate

This topic describes how to view details of a private certificate, including the common name, expiration time, and status.

Prerequisites

You have applied for a private certificate. For details, see **Applying for a Private Certificate**.

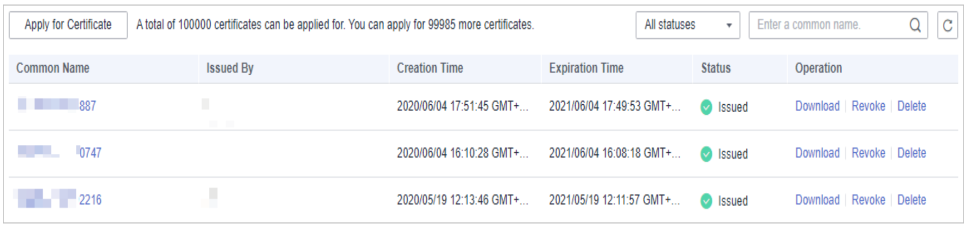
Procedure

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. In the navigation pane on the left, choose **Private Certificate Management** > **Private Certificate**. The **Private Certificate** page is displayed.

Step 3 View the private certificate information. **Table 3-11** describes the private certificate parameters.

Figure 3-27 Private certificate list



A total of 100000 certificates can be applied for. You can apply for 99985 more certificates.

Common Name	Issued By	Creation Time	Expiration Time	Status	Operation
[redacted]887	[redacted]	2020/06/04 17:51:45 GMT+...	2021/06/04 17:49:53 GMT+...	Issued	Download | Revoke | Delete
[redacted]0747		2020/06/04 16:10:28 GMT+...	2021/06/04 16:08:18 GMT+...	Issued	Download | Revoke | Delete
[redacted]2216	[redacted]	2020/05/19 12:13:46 GMT+...	2021/05/19 12:11:57 GMT+...	Issued	Download | Revoke | Delete

NOTE

- Select a certificate state from the drop-down list of **All statuses**. Then the certificate list displays only the private certificates in the corresponding state.
- Enter a name of a private certificate in the search box in the upper right corner and click 🔍 or press **Enter** to search for a specified private certificate.

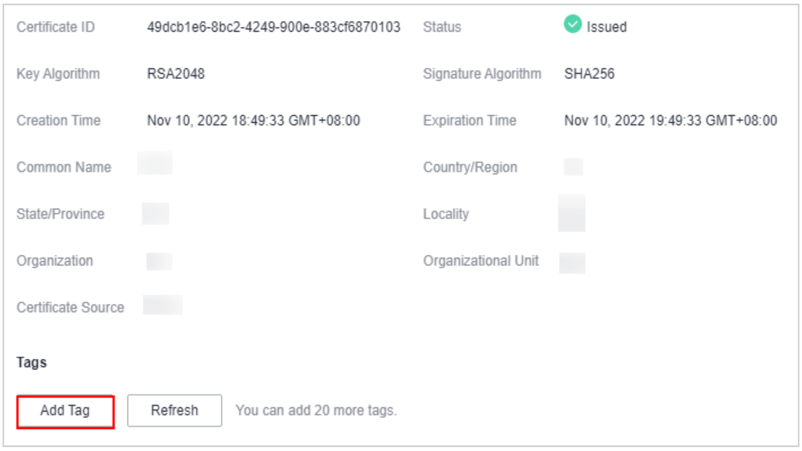
Table 3-11 Private certificate parameters

Parameter	Description
Common Name	Indicates the name of the private certificate configured during certificate application.
Issued By	Indicates the name of the private CA that issues the private certificate.
Creation Time	Indicates the time when a private certificate is created.
Expiration Time	Indicates the time when a certificate expires.
Status	Indicates the certificate status. The value can be: ● **Issued** The private certificate is issued. ● **Expired** The private certificate is expired. ● **Revoked** The private certificate is revoked.
Operation	You can download, revoke, or delete the certificate.

Step 4 Click the common name of a private certificate to view its details.

You can click **Add Tag** on the private certificate details page to identify the private certificate. TMS's predefined tag function is recommended for adding the same tag to different cloud resources.

Figure 3-28 Private certificate details



Certificate ID	49dcb1e6-8bc2-4249-900e-883cf6870103	Status	✓ Issued
Key Algorithm	RSA2048	Signature Algorithm	SHA256
Creation Time	Nov 10, 2022 18:49:33 GMT+08:00	Expiration Time	Nov 10, 2022 19:49:33 GMT+08:00
Common Name	[redacted]	Country/Region	[redacted]
State/Province	[redacted]	Locality	[redacted]
Organization	[redacted]	Organizational Unit	[redacted]
Certificate Source	[redacted]		

Tags

Add Tag Refresh You can add 20 more tags.

----End

3.6 Deleting a Private Certificate

This topic describes how to delete a private certificate from Huawei Cloud. A deleted private certificate remains valid and trusted.

You can delete a certificate that is no longer needed.

Prerequisites

The private certificate is in the **Issued**, **Expired**, or **Revoked** state.

Constraints

- A deleted certificate cannot be restored. Exercise caution with the deletion.
- After you submit a certificate deletion application, you cannot cancel it. Exercise caution when performing this operation.

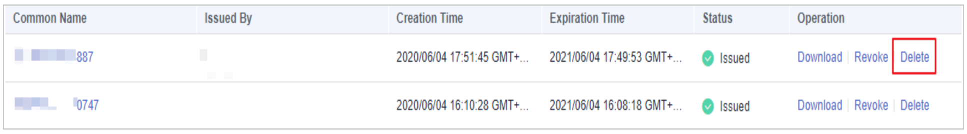
Procedure

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. In the navigation pane on the left, choose **Private Certificate Management** > **Private Certificate**. The **Private Certificate** page is displayed.

Step 3 Locate the row of the private certificate to be deleted and click **Delete** in the **Operation** column.

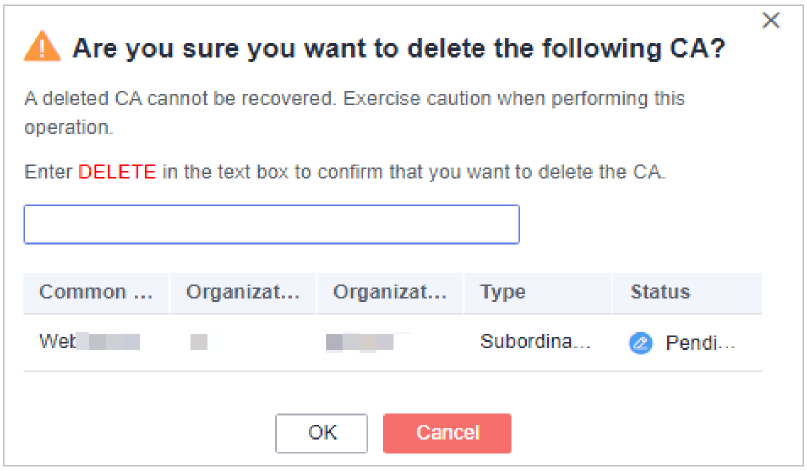
Figure 3-29 Deleting a private certificate



Common Name	Issued By	Creation Time	Expiration Time	Status	Operation
[redacted]887	[redacted]	2020/06/04 17:51:45 GMT+...	2021/06/04 17:49:53 GMT+...	✓ Issued	Download | Revoke | Delete
[redacted]0747		2020/06/04 16:10:28 GMT+...	2021/06/04 16:08:18 GMT+...	✓ Issued	Download | Revoke | Delete

Step 4 In the displayed dialog box, enter **DELETE** to confirm the deletion.

Figure 3-30 Delete Certificate



Are you sure you want to delete the following CA?

A deleted CA cannot be recovered. Exercise caution when performing this operation.

Enter DELETE in the text box to confirm that you want to delete the CA.

Common ...	Organizat...	Organizat...	Type	Status
Wet[redacted]	[redacted]	[redacted]	Subordina...	Pendi...

Step 5 Click **OK**. If message "Certificate xxx deleted successfully." is displayed in the upper right corner of the page, the private certificate is deleted successfully.

----End

4 Sharing

4.1 Overview

Introduction

The Private Certificate Management service in CCM allows you to share private CAs of account A with all member accounts in the same organization unit. These member accounts, such as accounts B and C, can use the shared CA to issue certificates.

- Account A is the private CA owner (owner for short).
- Accounts B and C are private CA recipients.

Private CA Owner and Recipient Permissions

Owners can perform all operations on private CAs, while recipients can only perform certain operations. For details, see **Table 4-1**.

Table 4-1 Operations supported for private CA recipients

Role	Operation Supported	Description
Recipient	pca:ca:export	Access through the console or API
	pca:ca:get	Access through the console or API
	pca:ca:listTags	Access through the console or API
	pca:ca:issueCert	Access through the console or API
	pca:ca:issueCertByCsr	Access through the console or API
	pca:ca:revokeCert	Access through the console or API

Supported Resource Types and Regions

Table 4-2 lists the resource types and regions can be shared in PCA.

Table 4-2 Resources and regions supported by PCA

Cloud Service	Resource Type	Supported Region
PCA	ca: private CA	ALL

Billing Description

For details about PCA billing, see **Billing Items**.

The owner of a shared private CA pays for the CA. So, only the resource owner will be charged for shared resources.

4.2 Creating a Resource Share

Scenario

To share resources with other accounts, you need to create a resource share first. During the creation, you need to specify resources to be shared, configure permissions, specify users to be shared with, and confirm the configuration.

Procedure

Step 1 **Log in to the management console**.

Step 2 Click ☰ in the upper left corner, choose **Management & Governance** > **Resource Access Manager**, and go to the resource access management page.

Step 3 Choose **Shared by Me** > **Resource Shares**.

Step 4 Click **Create Resource Share** in the upper right corner.

Step 5 Set resource type to **pca:ca**, choose the corresponding region, and select private CAs to be shared. Click **Next: Associate Permissions**.

Step 6 Associate a RAM managed permission with each resource type on the displayed page. Then, click **Next: Grant Access to Principals** in the lower right corner.

Step 7 Specify the principals that you want to have access to the resources on the displayed page. Then, click **Next: Confirm** in the lower right corner.

Table 4-3 Description

Parameter	Description
Principal Type	● Organization For details about how to create an organization, see **Creating an Organization**. NOTE If you haven't enabled resource sharing with organizations, this parameter cannot be set to **Organization**. For details, see **Enabling Sharing with Organizations**. ● Huawei Cloud account ID

Step 8 Check the configurations and click **OK**.

NOTE

After a resource share is created, RAM initiates a resource sharing invitation to the specified principals. If the principal type is **Huawei Cloud account ID**, the principals can access and use the shared resources only after they accept the invitation. If the principal type is **Organization**, the principals in that organization are automatically granted access to the shared resources without the use of invitations.

----End

4.3 Updating a Resource Share

You can update a resource share at any time, including updating its name, description, tags, shared resources, RAM managed permissions, and principals.

Procedure

Step 1 **Log in to the management console**.

Step 2 Click ☰ in the upper left corner, choose **Management & Governance** > **Resource Access Manager**, and go to the resource access management page.

Step 3 Choose**Shared by Me** > **Resource Shares**.

Step 4 Select the resource share to be updated and click **Edit** in the **Operation** column.

Step 5 Update the resource share on the displayed page. You can modify its name, description, tags, and add or delete shared resources.

Step 6 After the update is complete, click **Next: Associate Permissions** in the lower right corner.

Step 7 Add or delete the permissions supported by **pca:ca**. Wait until the update is complete, click **Next: Grant Access to Principals**.

Step 8 On the displayed page, add or delete principals based on your needs. Then, click **Next: Confirm** in the lower right corner.

Step 9 Confirm the configurations and click **OK** in the lower right corner.

----End

4.4 Viewing a Resource Share

You can check the details of the created resource share, as well as search for, edit, and delete a resource share. Moreover, you can check the shared resources and resource principals.

Procedure

Step 1 **Log in to the management console**.

Step 2 Click ☰ in the upper left corner, choose **Management & Governance** > **Resource Access Manager**, and go to the resource access management page.

Step 3 Choose**Shared by Me** > **Resource Shares**.

Step 4 Click the target resource share, go to the details page, and check the configurations.

NOTE

You can query shared private CAs and resource principals. For details, see **Viewing Your Shared Resources** and **Viewing Principals You Share With**.

----End

4.5 Responding to a Resource Sharing Invitation

You can check the resource sharing invitation and confirm whether you will accept the invitation.

Constraints

- If you are in the same organization with the resource owner, and sharing resources with organization has been enabled, you do not need to accept the invitation to access the shared resources.
- If you are in a different organization from the resource owner, or sharing resources with organization has not been enabled, you will receive a resource sharing invitation.
- The invitation exists for seven days by default. If the invitation is not accepted after seven days, it is rejected by system. To use the shared resources, the owner should create a resource share to generate a new invitation.

  NOTE

  For details about enabling resource sharing with organizations, see **Enabling Sharing with Organizations**.

Procedure

Step 1 Log in to the management console.

Step 2 Click ≡ in the upper left corner, choose **Management & Governance** > **Resource Access Manager**, and go to the resource access management page.

Step 3 Choose **Share with Me** > **Resource Shares** and access the resource share management page.

Step 4 Click **Resource Shares To Be Accepted**, select target resource shares, and click **Accept** or **Reject** in the **Operation** column.

Step 5 Click **OK** in the displayed dialog box.

Step 6 After accepting the invitation, you can check the accepted resource shares on the displayed page.

> NOTE
>
> After accepting the invitation, you can view the shared resources in use and the resource owner. For details, see **Viewing Your Shared Resources** and **Viewing Principals You Share With**.

----End

4.6 Leaving a Resource Share

If you no longer need to access shared private CAs, you can leave a share at any time. After you leave the share, you will lose access to the shared private CA.

Procedure

Step 1 Log in to the management console.

Step 2 Click ≡ in the upper left corner, choose **Management & Governance** > **Resource Access Manager**, and go to the resource access management page.

Step 3 Choose **Share with Me** > **Resource Shares** and access the resource share management page.

Step 4 Click **Accepted Resource Shares**, select target instances, and click **Leave**.

Step 5 Click **Leave** in the displayed dialog box.

----End

5 Managing Tags

5.1 Overview

Scenario

Tags can be used to identify private CAs and private certificates. You can use tags to group and centrally manage private CAs and private certificates by usage, owner, or environment.

You can add tags when purchasing a CA or private certificate, or add tags on the details page of the CA or private certificate after the purchase.

Tag Naming Rules

- Each tag consists of a key-value pair.
- A maximum of 20 tags can be added to each private CA or private certificate.
- For each resource, a tag key must be unique and can have only one tag value.
- A tag consists of a tag key and a tag value. The naming rules are listed in **Table 5-1**.

  NOTE

  If your organization has configured a tag policy for the CCM service, you need to add tags to private CA or private CAs based on the tag policy. Otherwise, the tagging operation might fail. For more information about the tag policy, contact your organization administrator.

Table 5-1 Tag parameters

Parameter	Rule	Example
Tag key	● This parameter is mandatory. ● For a private CA or private certificate, the tag key must be unique. ● The value can contain a maximum of 128 characters. ● The value cannot start or end with a space. ● The value cannot start with **_sys_**. ● The following character types are allowed: – Chinese – English – Digit – Space – Special characters: _.:=+-@	cost
Tag value	● This parameter can be left empty. ● The value can contain a maximum of 255 characters. ● The value cannot start or end with a space. ● The following character types are allowed: – Chinese – English – Digit – Space – Special characters: _.:=+-@	100

5.2 Creating a Tag Policy

Introduction

Tag policies are a type of policy that can help you standardize tags across resources in your organization's accounts. A tag policy is only applied to tagged resources and tags that are defined in that policy.

For example, a tag policy can specify that a tag attached to a resource must use the case treatment and tag values defined in the tag policy. If the case and value of the tag do not comply with the tag policy, the resource will be marked as non-compliant.

You can use tag policies as detective or preventive guardrails:

1. Detective guardrails: If a resource tag violates a tag policy, the resource will appear as noncompliant in the compliance result.

2. Preventive guardrails: If enforcement is enabled for a tag policy, non-compliant tagging operations will be prevented from being performed on specified resource types.

Constraints

Only organization administrators can create a tag policy.

NOTE

Before you create a tag policy and add it to the organization unit and account, a tag policy must be enabled by the administrator account. For details, see **Enabling or Disabling the Tag Policy Type**.

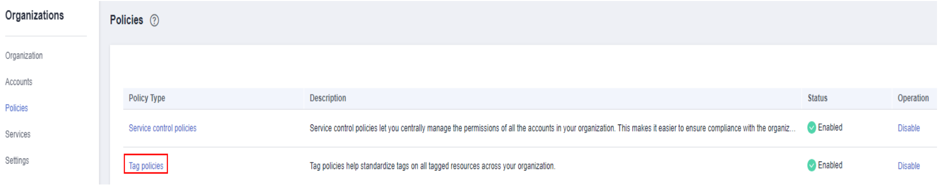
Procedure

Step 1 Log in to Huawei Cloud as an organization administrator or an administrator account.

Step 2 Click ☰ on the left, choose **Management & Governance** > **Organizations**. The organization management page is displayed.

Step 3 Click **Policies** on the left to go to the policy management page and click **Tag policies**.

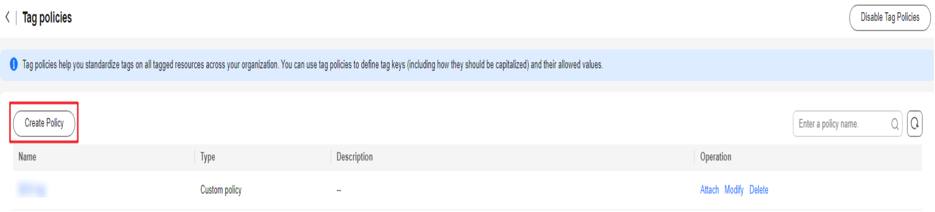
Figure 5-1 Accessing the **Tag policies** page



Policy Type	Description	Status	Operation
Service control policies	Service control policies let you centrally manage the permissions of all the accounts in your organization. This makes it easier to ensure compliance with the organiz...	Enabled	Disable
Tag policies	Tag policies help standardize tags on all tagged resources across your organization.	Enabled	Disable

Step 4 Click **Create Policy**.

Figure 5-2 Creating a policy



Tag policies

Disable Tag Policies

Tag policies help you standardize tags on all tagged resources across your organization. You can use tag policies to define tag keys (including how they should be capitalized) and their allowed values.

Create Policy

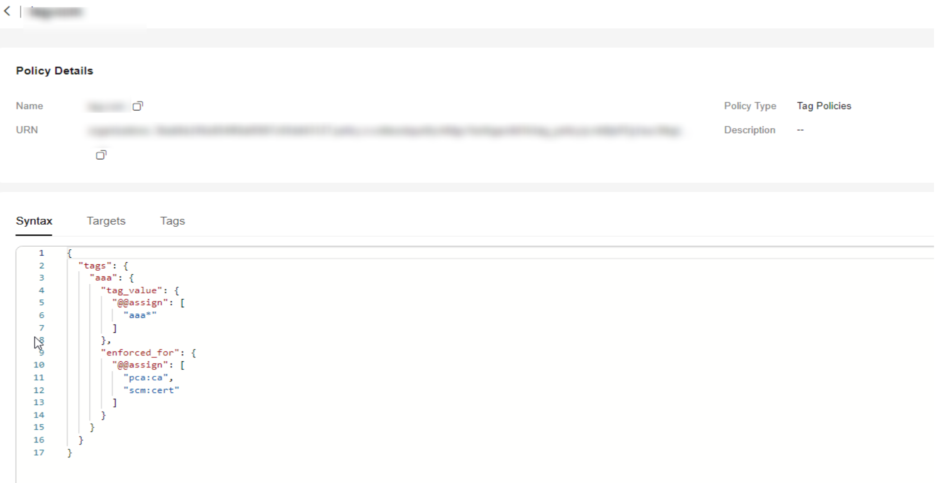
Enter a policy name.

Name	Type	Description	Operation
[redacted]	Custom policy	--	Attach Modify Delete

Step 5 Enter a policy name. Note that the name you enter for a policy cannot be the same as that of other policies.

Step 6 Set a policy by referring to **Tag Policy Syntax**. The system automatically verifies the syntax. If the syntax is incorrect, modify it as prompted.

Figure 5-3 Setting a policy tag



[redacted]

Policy Details

Name [redacted]

URN [redacted]

Policy Type Tag Policies

Description --

```
{
  "tags": {
    "aaa": {
      "tag_value": {
        "@@assign": [
          "aaa*"
        ]
      },
      "enforced_for": {
        "@@assign": [
          "pca:ca",
          "scm:cert"
        ]
      }
    }
  }
}
```

Step 7 (Optional) Add one or more tags to the policy. Enter a tag key and a tag value, and click **Add**.

Step 8 Click **Save** in the lower right corner. If the tag policy is created successfully, it will be added to the list.

NOTE

To update or delete a tag policy, see **Updating or Deleting a Tag Policy**.

To attach or detach a tag policy, see **Attaching or Detaching a Tag Policy**.

----End

5.3 Creating a Tag

This topic describes how to add tags to private CAs and private certificates.

Creating a Tag for a Private CA

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. The service console is displayed.

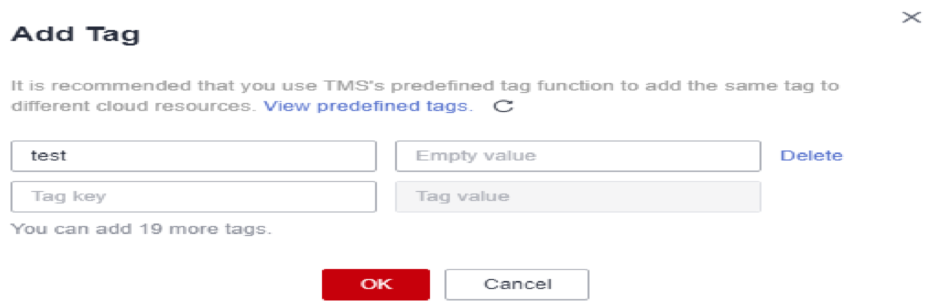
Step 3 In the navigation pane on the left, choose **Private Certificate Management > Private CAs**.

Step 4 Click the name of the target private CA. The private CA details page is displayed.

Step 5 Click the **Tags** tab to go to the tag management page.

Step 6 Click **Edit Tag**. In the displayed **Edit Tag** dialog box, click **Add Tag**. In the text box, specify **Tag key** and **Tag value**.

Figure 5-4 Add Tag



Add Tag

It is recommended that you use TMS's predefined tag function to add the same tag to different cloud resources. View predefined tags.

test	Empty value	Delete
Tag key	Tag value	

You can add 19 more tags.

NOTE

To delete a tag, click **Delete** next to it.

- If you want to use the same tag to identify multiple cloud resources, you can create predefined tags in TMS. In this way, the same tag can be selected for all services. For more information about predefined tags, see the *Tag Management Service User Guide*.
- To delete a tag, click **Delete** next to it.

Step 7 Click **OK** to complete.

----End

Creating a Tag for a Private Certificate

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. The service console is displayed.

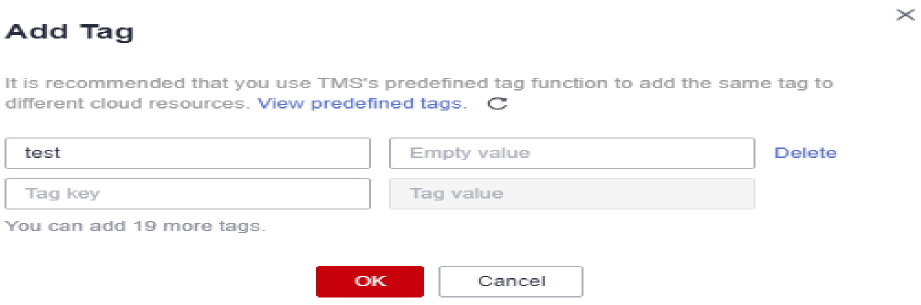
Step 3 In the navigation pane on the left, choose **Private Certificate Management > Private Certificates**.

Step 4 Click the name of the target private certificate to go to its details page.

Step 5 Click the **Tags** tab to go to the tag management page.

Step 6 Click **Edit Tag**. In the displayed **Edit Tag** dialog box, click **Add Tag**. In the text box, specify **Tag key** and **Tag value**.

Figure 5-5 Add Tag



Add Tag

It is recommended that you use TMS's predefined tag function to add the same tag to different cloud resources. View predefined tags.

You can add 19 more tags.

NOTE

To delete a tag, click **Delete** next to it.

- If you want to use the same tag to identify multiple cloud resources, you can create predefined tags in TMS. In this way, the same tag can be selected for all services. For more information about predefined tags, see the *Tag Management Service User Guide*.
- To delete a tag, click **Delete** next to it.

Step 7 Click **OK** to complete.

----End

5.4 Searching for Private CAs or Certificates by Tag

This topic describes how to search for private CAs or certificates that meet the search criteria by tag in the current project.

Prerequisites

A tag has been added. For details, see **Creating a Tag**.

Constraints

At most 20 tags can be added for one search. If multiple tags are added, private CAs or certificates that meet all search criteria will be displayed.

Searching for Private CAs by Tag

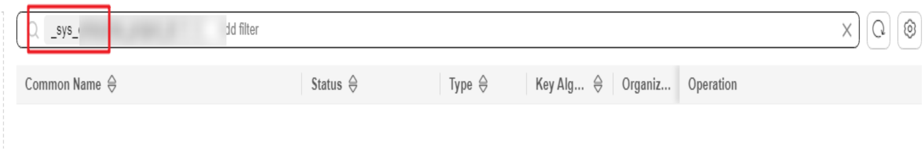
Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. The service console is displayed.

Step 3 In the navigation pane on the left, choose **Private Certificate Management** > **Private CAs**.

Step 4 Click the search box and enter the tag key and tag value to search for the resource. Private CAs that meet the search criteria are displayed.

Figure 5-6 Search result



sys[redacted] dd filter

Common Name	Status	Type	Key Alg...	Organiz...	Operation

NOTE

- At most 20 tags can be added for one search. If multiple tags are added, private CAs that meet all search criteria will be displayed.
- If you want to delete an added tag from the search criteria, click ✕ ⊗ next to the tag.

----End

Searching for Private Certificates by Tag

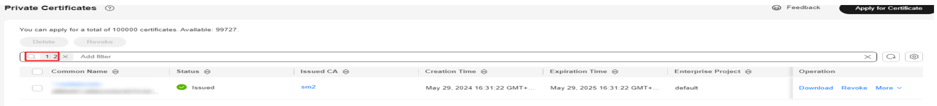
Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. The service console is displayed.

Step 3 In the navigation pane on the left, choose **Private Certificate Management > Private Certificates**.

Step 4 Click the search box and enter the tag key and tag value to search for the resource. Private certificates that meet the search criteria are displayed.

Figure 5-7 Search result



Private Certificates

You can apply for a total of 100000 certificates. Available: 99727.

1: 2 Add filter

□	Common Name	Status	Issued CA	Creation Time	Expiration Time	Enterprise Project	Operation
□	[redacted]	Issued	sm2	May 29, 2024 16:31:22 GMT+...	May 29, 2025 16:31:22 GMT+...	default	Download Revoke More

NOTE

- At most 20 tags can be added for one search. If multiple tags are added, private certificates that meet all search criteria will be displayed.
- If you want to delete an added tag from the search criteria, click ✕ ⊗ next to the tag.

----End

5.5 Modifying a Tag Value

This section describes how to modify a private CA or private certificate tag.

Modifying the Private CA Tag Value

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. The service console is displayed.

Step 3 In the navigation pane on the left, choose **Private Certificate Management > Private CAs**.

Step 4 Click the name of the target private CA. The private CA details page is displayed.

Step 5 Click **Tags** tab to go to the tag management page.

Step 6 Click **Edit Tag**. In the displayed dialog box, change the tag value and click **OK**. The tag value is changed.

----End

Changing the Tag Value of a Private Certificate

Step 1 Log in to the **management console**.

Step 2 In the navigation pane on the left, choose **Private Certificate Management > Private Certificates**.

Step 3 Click the name of the target private certificate. The details page is displayed.

Step 4 Click **Tags** tab to go to the tag management page.

Step 5 Click **Edit Tag**. In the displayed dialog box, change the tag value and click **OK**. The tag value is changed.

----End

5.6 Deleting a Tag

This section describes how to delete a private CA tag or private certificate tag.

Deleting a Private CA Tag

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. The service console is displayed.

Step 3 In the navigation pane on the left, choose **Private Certificate Management > Private CAs**.

Step 4 Click the name of the target private CA. The private CA details page is displayed.

Step 5 Click **Tags** tab to go to the tag management page.

Step 6 Click **Edit Tag**. In the displayed dialog box, locate the row that contains the target tag, click **Delete**, and then click **OK**.

----End

Deleting a Private Certificate Tag

Step 1 Log in to the **management console**.

Step 2 Click ☰ in the upper left corner of the page and choose **Security & Compliance** > **Cloud Certificate Management Service**. The service console is displayed.

Step 3 In the navigation pane on the left, choose **Private Certificate Management > Private Certificates**.

Step 4 Click the name of the target private certificate. The details page is displayed.

Step 5 Click **Tags** tab to go to the tag management page.

Step 6 Click **Edit Tag**. In the displayed dialog box, locate the row that contains the target tag, click **Delete**, and then click **OK**.

----End

6 PCA Permissions Management

6.1 Creating a User and Granting PCA Permissions to the User

This topic describes how to use **IAM** to implement fine-grained permissions control for your PCA resources. With IAM, you can:

- Create IAM users for employees based on the organizational structure of your enterprise. Each IAM user has their own security credentials, providing access to PCA resources.
- Grant only the permissions required for users to perform a task.
- Entrust an account or cloud service to perform professional and efficient O&M to your PCACCM resources.

If your account does not require individual IAM users, skip this chapter.

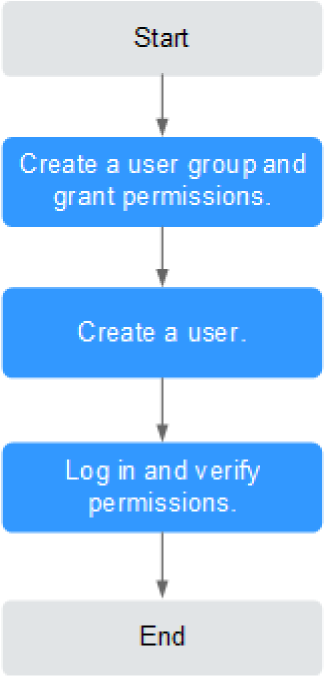
This section provides some methods for you to assign permissions to a user. **Figure 6-1** shows the process.

Prerequisites

Learn about the permissions (see **Permissions Management**) supported by PCA and choose policies or roles based on your requirements.

Process Flow

Figure 6-1 Process for granting PCA permissions


Start
Create a user group and grant permissions.
Create a user.
Log in and verify permissions.
End

1. **Create a user group and assign permissions**.

   Create a user group on the IAM console and grant the user group the **PCA FullAccess**.

2. **Create a user and add it to a user group**.

   Create a user on the IAM console and add the user to the group created in **1**.

3. **Log in and verify the permissions**.

   Log in to the CCM console by using the created user, and verify that the user only has read permissions for CCM.

   Choose **Cloud Certificate Management Service** under **Security** in the **Service List**. If no message appears indicating that you have no permissions to access the service, the policy **PCA FullAccess** has already taken effect.

6.2 PCA Custom Policies

Custom policies can be created to supplement the system-defined policies of CCM.

You can create custom policies in either of the following two ways:

- Visual editor: Select cloud services, actions, resources, and request conditions. This does not require knowledge of policy syntax.
- JSON: Edit JSON policies from scratch or based on an existing policy.

For details, see **Creating a Custom Policy**. The following section contains examples of common PCA custom policies.

Example PCA Custom Policies

- Example 1: authorizing users to create a CA

```
{
    "Version": "1.1",
    "Statement": [
        {
            "Action": [
                "pca:ca:create
            ],
            "Effect": "Allow"
        }
    ]
}
```

- Example 2: denying certificate deletion

  A policy with only "Deny" permissions must be used in conjunction with other policies to take effect. If the permissions assigned to a user contain both "Allow" and "Deny", the "Deny" permissions take precedence over the "Allow" permissions.

  If you need to assign permissions of the **PCA FullAccess** policy to a user but you want to prevent the user from deleting certificates, you can create a custom policy for denying certificate deletion, and attach both policies to the group that the user belongs to. Then, the user can perform all operations on certificates except deleting certificates. The following is an example deny policy:

```
{
    "Version": "1.1",
    "Statement": [
        {
            "Action": [
                "pca:ca:delete"
            ],
            "Effect": "Deny"
        }
    ]
}
```

A Change History

2024-05-30	This issue is the thirteenth official release. Added **Managing Tags**, which describes the interconnection with Tag Management Service (TMS).
2023-1-11	This issue is the fifth official release. Added **Configuring a CRL**.
2022-11-16	This issue is the fourth official release. Added **PCA Custom Policies**. Optimized the following topics: ● **Purchasing a Private CA** ● **Applying for a Private Certificate**
2022-10-31	This issue is the third official release. ● Optimized the document structure. Split the CCM user guide into two manuals: *SSL Certificate Manager User Guide* and *Private Certificate Manager User Guide*. ● Optimized **PCA Permissions Management**.
2022-09-29	This issue is the second official release. Optimized **Deleting a Private Certificate**.
2022-03-24	This issue is the first official release.