



HPE Alletra 5000 Storage Array

KeyControl® Integration Guide

2024-03-05

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Chapter 1. Introduction

This document describes the integration of the Hewlett Packard Enterprise (HPE) Alletra 5000 Storage Array (referred to as Alletra in this guide) with the Entrust KeyControl key management solution using the open standard KMIP protocol. KeyControl serves as a key manager for encryption keys by using various protocols, including KMIP.

1.1. Product configurations

Entrust has successfully tested the integration of KeyControl with HPE Alletra 5000 in the following configurations:

System	Version
Entrust KeyControl	10.2

1.2. Requirements

Before starting the integration process, familiarize yourself with:

- [HPE Alletra online documentation](#)
- [External Key Manager Support](#).
- [Entrust KeyControl Online Documentation Set](#).



Entrust recommends that you allow only unprivileged connections unless you are performing administrative tasks.

Chapter 2. Deploy and configure Entrust KeyControl

The following steps summarize the deployment of the Entrust KeyControl:

1. [Deploy a Entrust KeyControl cluster](#)
2. [Additional Entrust KeyControl cluster configuration](#)
3. [Authentication](#)
4. [Create DNS record for Entrust KeyControl cluster](#)
5. [Create a KMIP Vault in the Entrust KeyControl](#)
6. [View the KMIP Vault details](#)
7. [Edit the KMIP Vault](#)
8. [Add KMIP Vault Administrators](#)

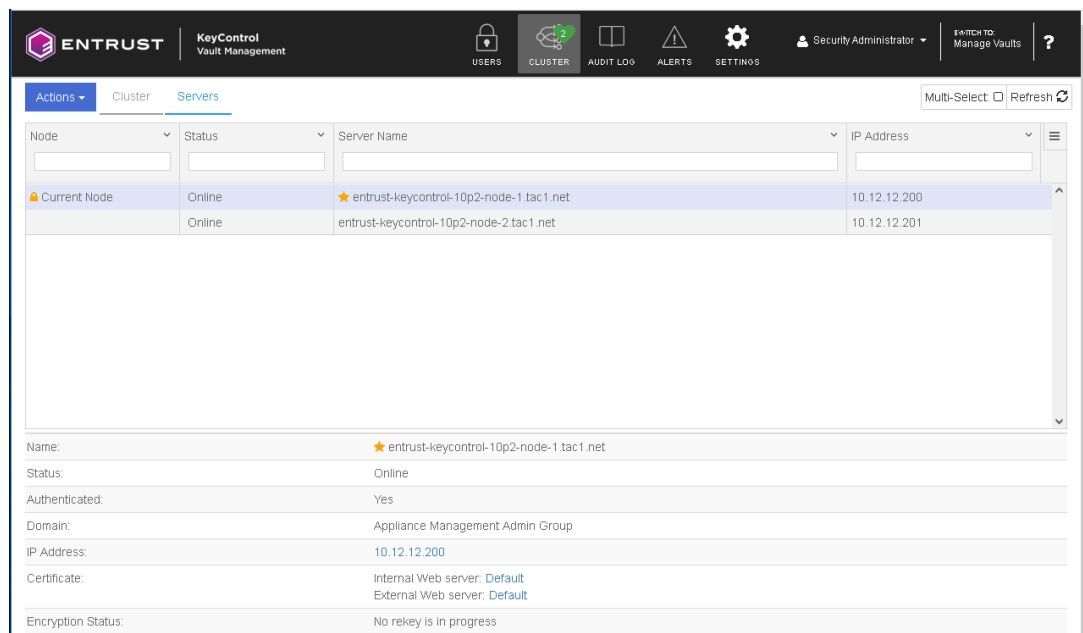
2.1. Deploy a Entrust KeyControl cluster

This deployment consists of two nodes.

1. Download the Entrust KeyControl software from [Entrust TrustedCare](#). This software is available both as an OVA or ISO image. The OVA installation method in VMware is used in this guide for simplicity.
2. Install Entrust KeyControl as described in [Entrust KeyControl OVA Installation](#).
3. Configure the first Entrust KeyControl node as described in [Configuring the First Entrust KeyControl Node \(OVA Install\)](#).
4. Add second Entrust KeyControl node to cluster as described in [Adding a New Entrust KeyControl Node to an Existing Cluster \(OVA Install\)](#).



Both nodes need access to an NTP server, otherwise the above operation will fail. Sign in to the console to change the default NTP server if required.



5. Install the Entrust KeyControl license as described in [Managing the Entrust KeyControl License](#).

2.2. Additional Entrust KeyControl cluster configuration

After the Entrust KeyControl cluster is deployed, additional system configuration can be done as described in [Entrust KeyControl System Configuration](#).

2.3. Authentication

For simplicity, local account authentication is used in this integration. For AD-managed Security groups, configure the LDAP/AD Authentication Server as described in [Specifying an LDAP/AD Authentication Server](#).

2.4. Create DNS record for Entrust KeyControl cluster

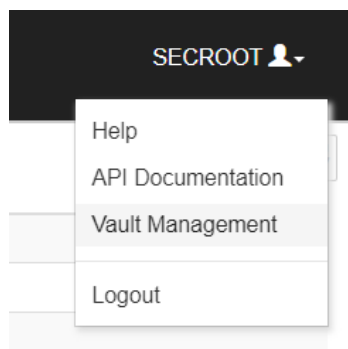
1. Create a DNS VIP record in the domain for the **Entrust KeyControl** cluster.
2. Associate all KeyControl Cluster node IPs to the DNS VIP, two in this integration..

2.5. Create a KMIP Vault in the Entrust KeyControl

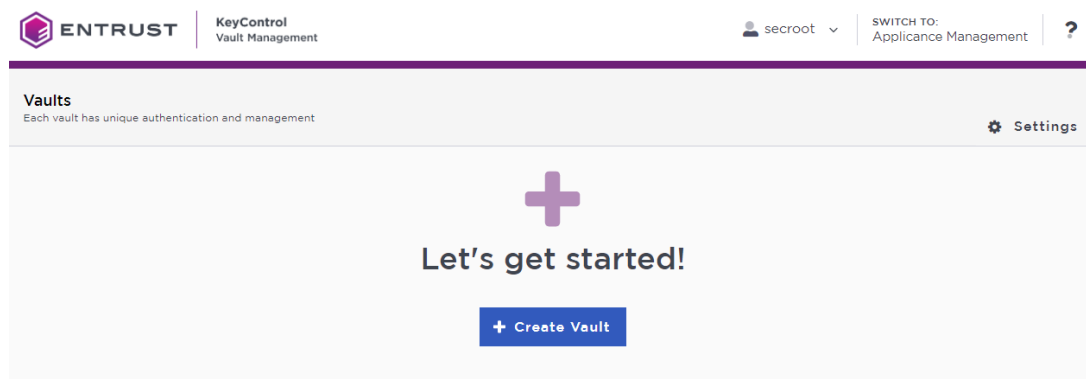
The Entrust KeyControl Vault appliance supports different type of vaults that can be used by all type of applications. This section describes how to create a KMIP Vault in the Entrust KeyControl Vault Server.

Refer to the [Creating a Vault](#) section of the admin guide for more details about it.

1. Sign in to the Entrust KeyControl Vault Server web user interface:
 - a. Use your browser to access the IP address of the server.
 - b. Sign in using the **secretroot** credentials.
2. From the user's dropdown menu, select **Vault Management**.



3. In the Entrust KeyControl Vault Management interface, select **Create Vault**.



Entrust KeyControl Vault supports the following types of vaults:

- **Cloud Key Management** - Vault for cloud keys such as BYOK and HYOK.
- **KMIP** - Vault for KMIP Objects.
- **PASM** - Vault for objects such as passwords, files, SSH keys, and so on.
- **Database** - Vault for database keys.
- **Tokenization** - Vault for tokenization policies.
- **VM Encryption** - Vault for encrypting VMs.

4. In the **Create Vault** page, create a **KMIP** Vault:

Field	Value
Type	KMIP
Name	Vault name
Description	Vault description
Admin Name	Vault administrator username
Admin Email	Vault administrator email

For example:

Create Vault

A vault will have unique authentication and management.

Type
Choose the type of vault to create

KMIP

Name*

HPE-Alletra-5000

Description

HPE Alletra 5000 integration with Entrust KeyControl

Max. 300 characters

Administration
Invite an individual to have complete access and control over this vault. They will be responsible for inviting additional members.

Admin Name*

Administrator

Admin Email*

Administrator@hpe.com

Create Vault **Cancel**

5. Select **Create Vault**. Then select **Close**.

✔ Vault Successfully Created

You will need to send the following information to the Vault Admin so they can log into their vault

Vault URL

[Redacted]

 Copy

User Name

Administrator@hpe.com

 Copy

Temporary Password

[Redacted]

 Copy

Close



The new vault's URL and sign-in credentials will be emailed to the administrator's email address entered above. In closed gap environments where email is not available, the URL and sign-in credentials are displayed at this time.

Example email:

Administrator, you have been invited to become an administrator of the KMIP vault, CommVault.

To sign in, use the following:

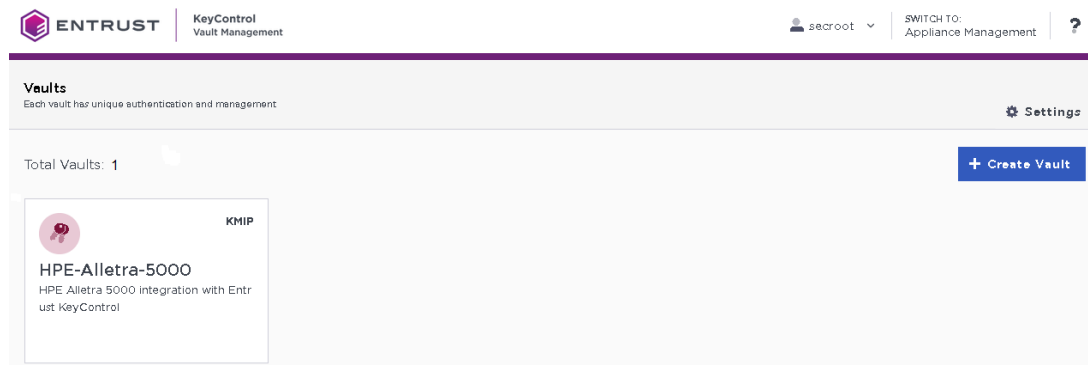
URL: 
User Name: 
Password: 

If you have any issues, [contact support](#).

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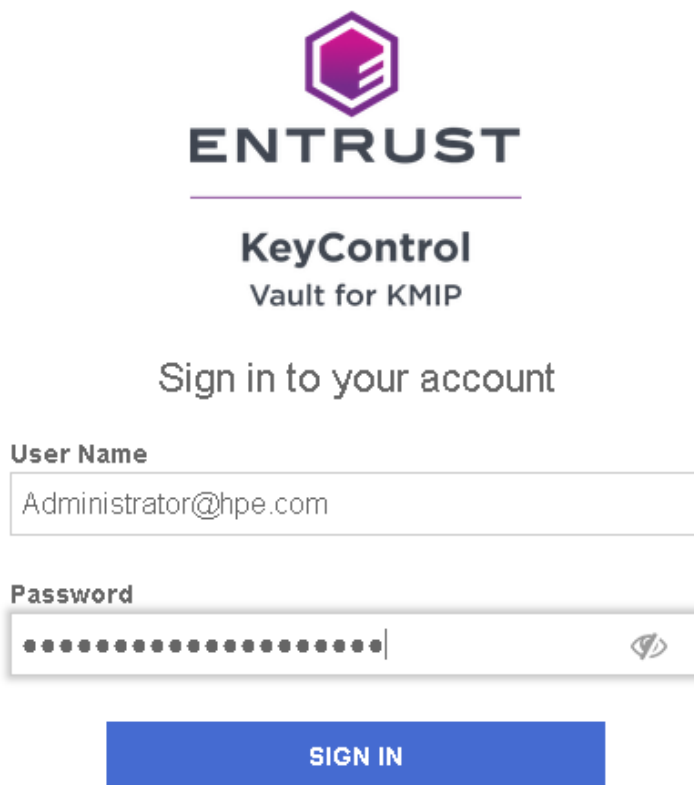
6. Bookmark the URL.
7. The newly created Vault is added to the **Vault Management** dashboard.

For example:



8. Sign in to the URL provided above with the temporary password. Change the initial password when prompted. Sign in again to verify.

For example:



The image shows the login interface for Entrust KeyControl Vault for KMIP. At the top is the Entrust logo, a purple hexagon with a stylized 'E' inside. Below the logo, the text 'ENTRUST' is written in a bold, black, sans-serif font. Underneath that, 'KeyControl' is written in a larger, bold, black font, and 'Vault for KMIP' is written in a smaller, black font. The main heading is 'Sign in to your account'. Below this are two input fields: 'User Name' with the text 'Administrator@hpe.com' and 'Password' with a series of dots representing a masked password. To the right of the password field is an eye icon for toggling visibility. At the bottom of the form is a blue button with the text 'SIGN IN' in white, uppercase letters.

9. Notice the new vault.

For example:



2.6. View the KMIP Vault details

1. Hover over the Vault and select **View Details**.

For example:

Vault Details



HPE-Alletra-5000

HPE Alletra 5000 integration with Entrust KeyControl

Type

KMIP

Created

Feb 15, 2024 07:19:00 AM

Vault URL

[Redacted]

 Copy

API URL

[Redacted]

 Copy

Administrator

Admin Name

Administrator

User Name

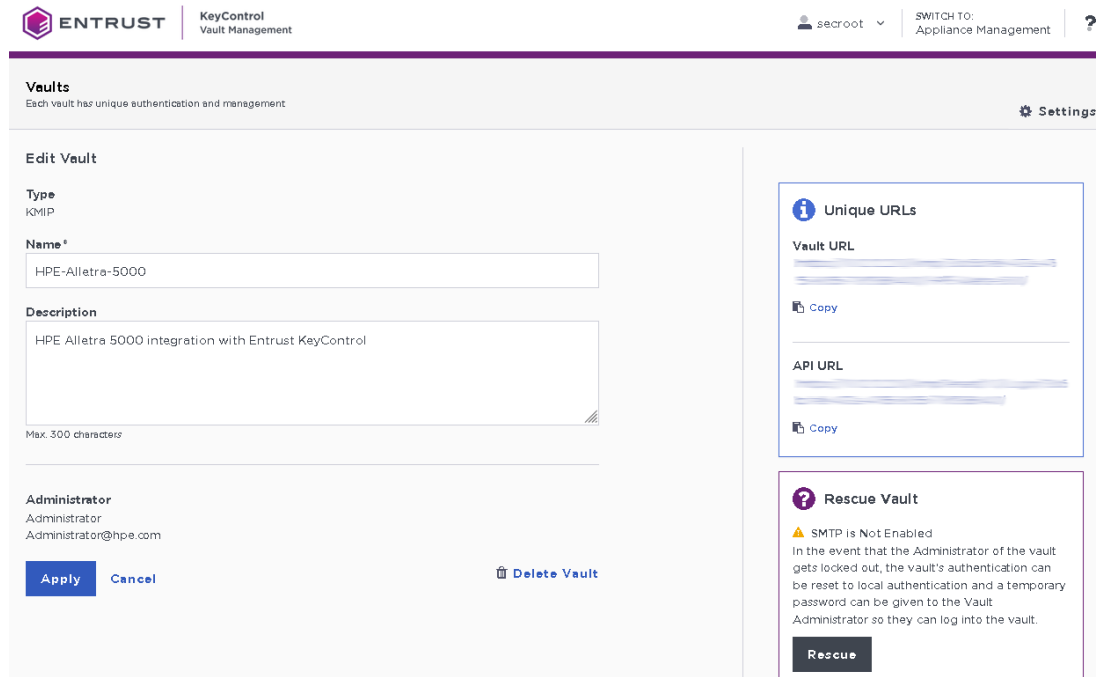
Administrator@hpe.com

2. Select **Close** when done.

2.7. Edit the KMIP Vault

1. Hover over the vault and select **Edit**.

For example:

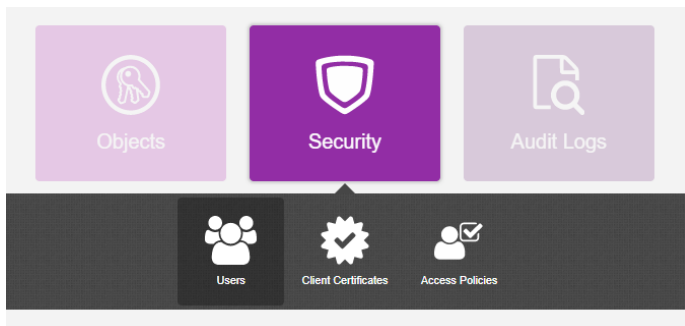


- 2. Select **Apply** when done.

2.8. Add KMIP Vault Administrators

It is important to have other administrators set up on the Vault for recovery purposes. Add one or more admins to the Vault.

- 1. Select **Security > Users**.



- 2. In the **Manage Users** dashboard:
 - a. Select the **+** icon to add one or more users.
 - b. Enter the user details in the **Add User** dialog.

For example:

Add User ✕

Status ENABLED

User Name ⓘ *

Full Name *

Email *

Password ⓘ *
 👁

Password Expiration *
 📅

Cancel
Add

c. Select **Add**.

After the user is added, a window appears which requests selection of the policy to be used by this user.

3. Select **Add to Existing Policy**.

✔ New User Successfully Added ✕

A new user has been successfully added.

Before the user can login, you will need to add the user to either a new or existing access policy. This will determine whether the user is an Admin or User.

Not Now
Add to Existing Policy
Create New Policy

4. On the **Add User to Access Policy** dialog, select the **KMIP Admin Policy** and select **Apply**. The new user is added as an administrator to the Vault.

For example:

Add User to Access Policy



User

Assign this user to one of the following access policies.

Filter

Name	Description	Role
<input checked="" type="checkbox"/> Kmip Admin Policy	Default Kmip Admin Policy	Kmip Admin Role

Showing 1 to 1 of 1 records (1 Selected)

Cancel

Apply

Chapter 3. Integrate Entrust KeyControl with HPE StoreOnce

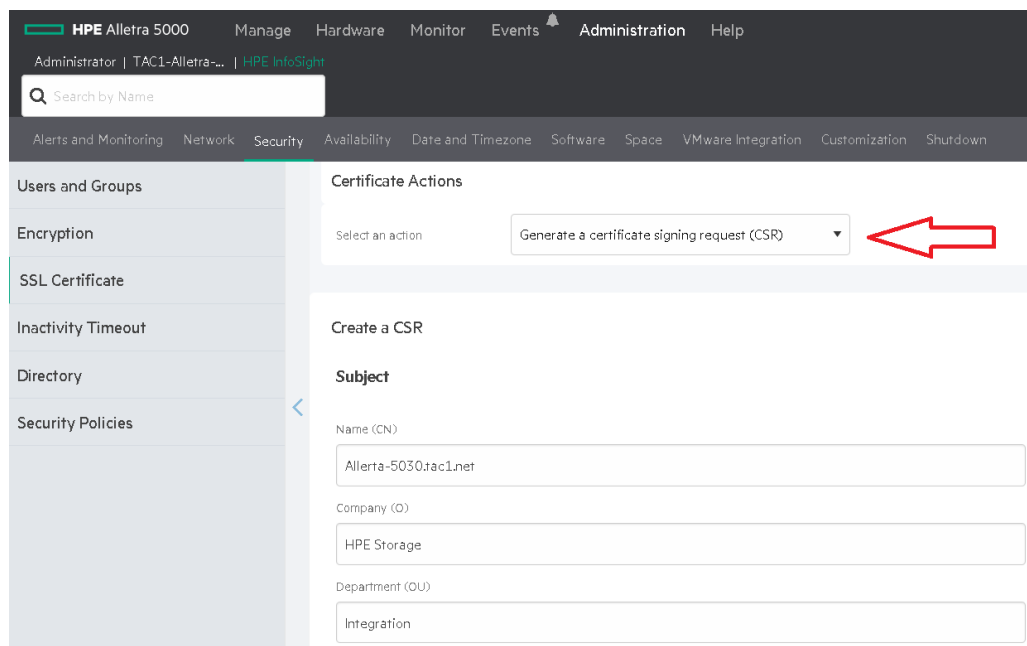
Follow these steps to register Entrust KeyControl as a KMS in HPE Alletra 5000.

Follow these steps to install and configure KeyControl.

1. [Create the HPE Alletra certificate request.](#)
2. [Create the client certificate bundle.](#)
3. [Import tenant client certificate into Alletra.](#)
4. [Register the Entrust KeyControl KMS.](#)

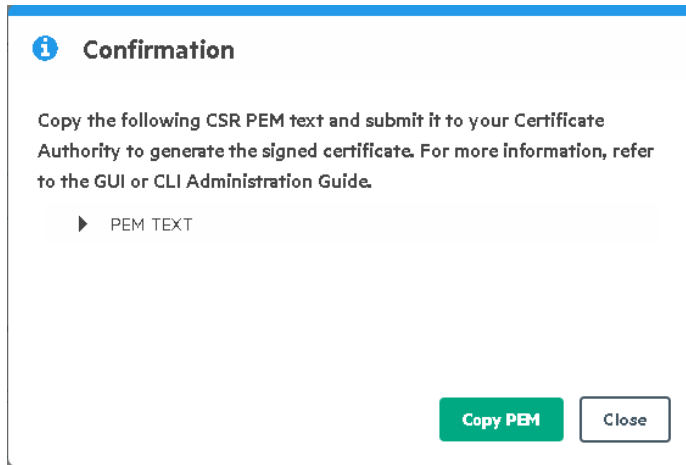
3.1. Create the HPE Alletra certificate request

1. Log into the Alletra 5030 webGUI using an account with Security Admin privileges.
2. Select **Administration** in the toolbar.
3. Select the **Security** tab and then **SSL Certificates** from the left-hand menu.
4. Select the **+** icon to add a certificate.
5. Select **Generate a certificate signing request (CSR)** from the **Select an action** drop-down list.

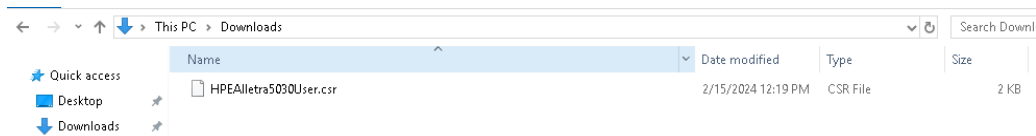


6. Enter the **Name** and other required information. You can leave all the other values as the defaults.

7. Select **GENERATE**.
8. Select **Copy PEM** in the **Confirmation** dialog.



9. Create a **.csr** file type with a text editor containing the copied certificate request. If you are using Notepad as your text editor, you might need to rename the file using the Windows CLI to get the correct file type extension.



3.2. Create the client certificate bundle

1. Sign in to the KMIP Vault with the URL and credentials from [Create a KMIP Vault in teh Entrust KeyControl](#).
2. Select **Security**, then **Client Certificates**.



3. In the **Manage Client Certificate** page, select the **+** icon on the right to create a new certificate. The **Create Client Certificate** dialog box appears.
4. In the **Create Client Certificate** dialog box:
 - a. Check **Add Authentication for Certificate**.
 - b. Enter the **User Name on Certificate**.

- c. Enter the **User Password on Certificate**.
- d. Enter the **Certificate Expiration**.
- e. Upload the certificate request created in [Create the HPE Alletra certificate request](#).
- f. Select **Create**.

For example:

The new certificates are added to the **Manage Client Certificate** pane.

Name	Valid From	Expiration	Generated From External C...	Authentication
<input type="checkbox"/> HPEAlletra5030User	Feb 16, 2024, 10:49:14 AM	Feb 16, 2025, 10:49:13 AM	✓ Yes	Enable

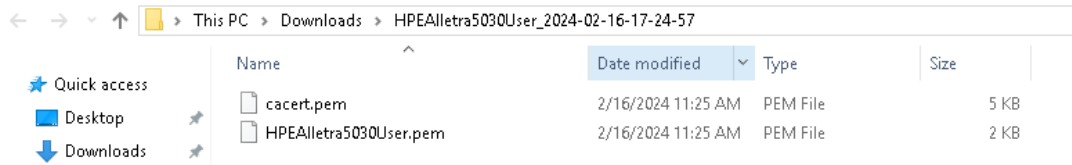
5. Select the certificate and select the **Download** icon to download the certificate.
6. Unzip the downloaded file. It contains the following:
 - A **certname.pem** file that includes both the client certificate and private key. In this example, this file is called **HPEAlletra5030User.pem**.

The client certificate section of the **certname.pem** file includes the lines **-----BEGIN CERTIFICATE-----** and **-----END CERTIFICATE-----** and all text between them.

The private key section of the **certname.pem** file includes the lines **-----BEGIN**

PRIVATE KEY----- and -----END PRIVATE KEY----- and all text in between them.

- A **cacert.pem** file which is the root certificate for the KMS cluster. It is always named **cacert.pem**.

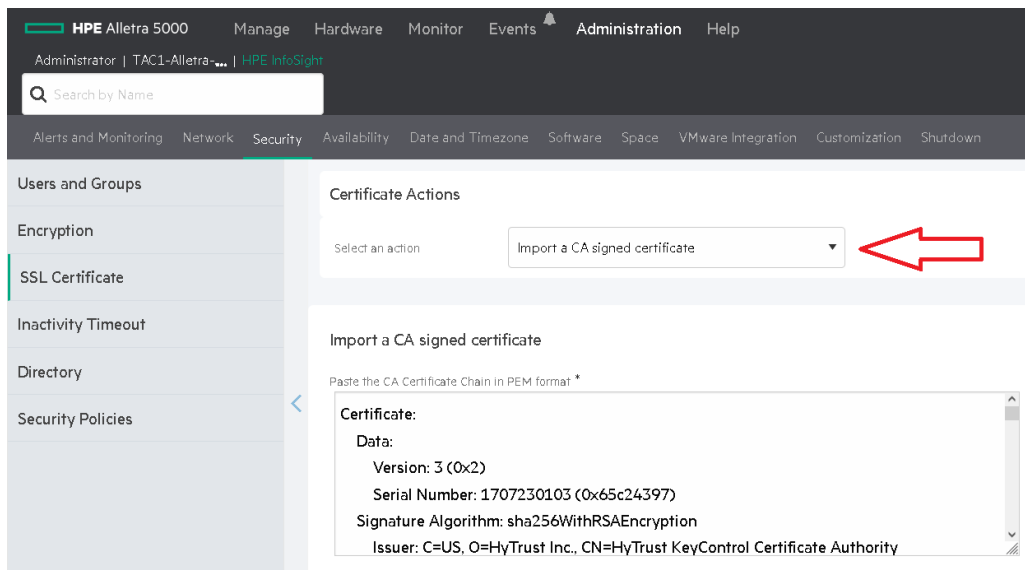


See the following link for additional information [Managing KMIP Tenant Client Certificates](#).

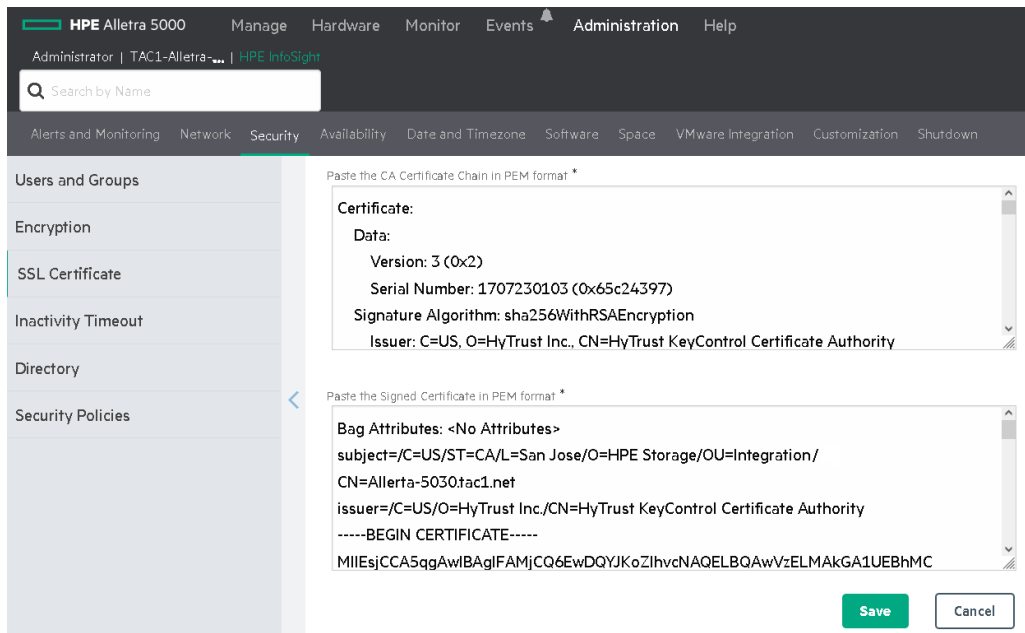
3.3. Import tenant client certificate into Alletra

To import tenant client certificate into Alletra:

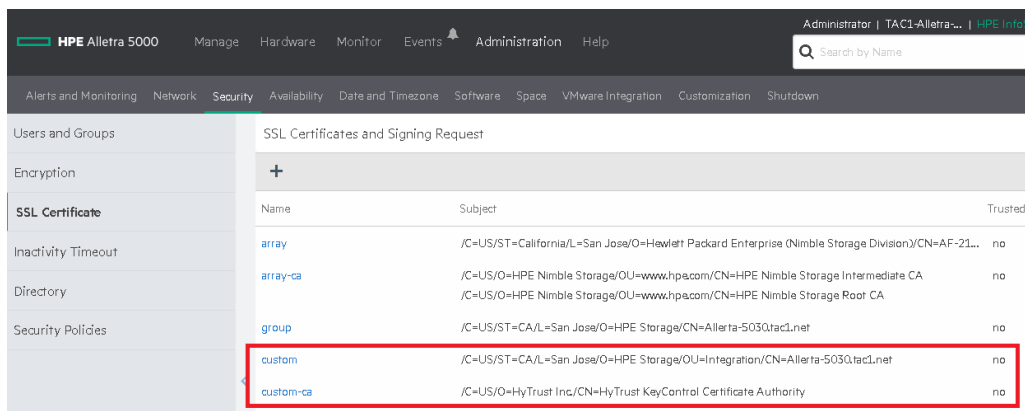
1. Log into the Alletra 5030 webGUI using an account with Security Admin privileges.
2. Select **Administration** in the toolbar. Then select **Security > SSL Certificates**.
3. Select the **+** icon to add a certificate.
4. Select **Input a CA signed certificate** in the **Select and action** drop-down text box.
5. Paste the content of the extracted **cacert.pem** file from [Create the client certificate bundle](#) in the **Paste the CA Certificate Chain in PEM format** text box.



- Paste the content of the extracted `HPEAllerta5030User.pem` file from [Create the client certificate bundle](#) in the **Paste the Signed Certificate in PEM format** text box. Then select **Save**.



The **custom** and **custom-ca** certificates are added.



3.4. Register the Entrust KeyControl KMS

To register the Entrust KeyControl KMS:

- Log into the Alletra 5030 webGUI using an account with Security Admin privileges.
- Select **Administration** in the toolbar. Then select **Security > Encryption**.
- Select the **External Key Manager** radio button. Then select **Add Key Manager**.
- Enter **Name**, **Description**, KeyControl cluster **Hostname**, and the credential for the certificate authentication in [Create the client certificate bundle](#). Then

select **Save**.



Notice the DNS entry created in [Create DNS record for Entrust KeyControl cluster](#) in **Hostname of IP Address** text box.

Create Key Manager

* Name

Description

* Hostname or IP address

* Port

* Protocol

Username

* Password



The external key manager is added.

HPE Alletra 5000 Manage Hardware Monitor Events Administration Help

Alerts and Monitoring Network **Security** Availability Date and Timezone Software Space VMware Integration Customization Shutdown

Users and Groups
Encryption
SSL Certificate
Inactivity Timeout
Directory
Security Policies

Encryption

To enable encryption, select a local or external key manager.

Local Key Manager

Change Passphrase

External Key Manager

CM	Connected + Active
EntrustKeyControl	Connected

[Add Key Manager](#)

Chapter 4. Test Integration

Execute the test as described in the HPE internal documentation.

Chapter 5. Integrating with an HSM

For guidance on integrating the Entrust KeyControl with a Hardware Security Module (HSM), consult with your HSM vendor. If you are using an Entrust nShield HSM, refer to the [Entrust KeyControl nShield HSM Integration Guide](#) available at [Entrust documentation library](#).

Chapter 6. Additional resources and related products

6.1. Entrust products

6.2. nShield product documentation