

Microsoft Azure

BYOK

Integration Guide

ESKM

utimaco[®]

Imprint

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1 Introduction

The integration of Microsoft Azure Cloud with Utimaco Enterprise Secure Key Manager (ESKM) enables organizations to securely manage encryption keys used for protecting data stored and processed in Azure. In this setup, ESKM functions as an external key manager, allowing the organization to retain full ownership and control of its encryption keys instead of relying on Azure-managed keys.

When integrated, Azure services can use the keys stored in ESKM to perform encryption and decryption operations. This ensures that all key usage is authorized and managed according to the organization's security policies.

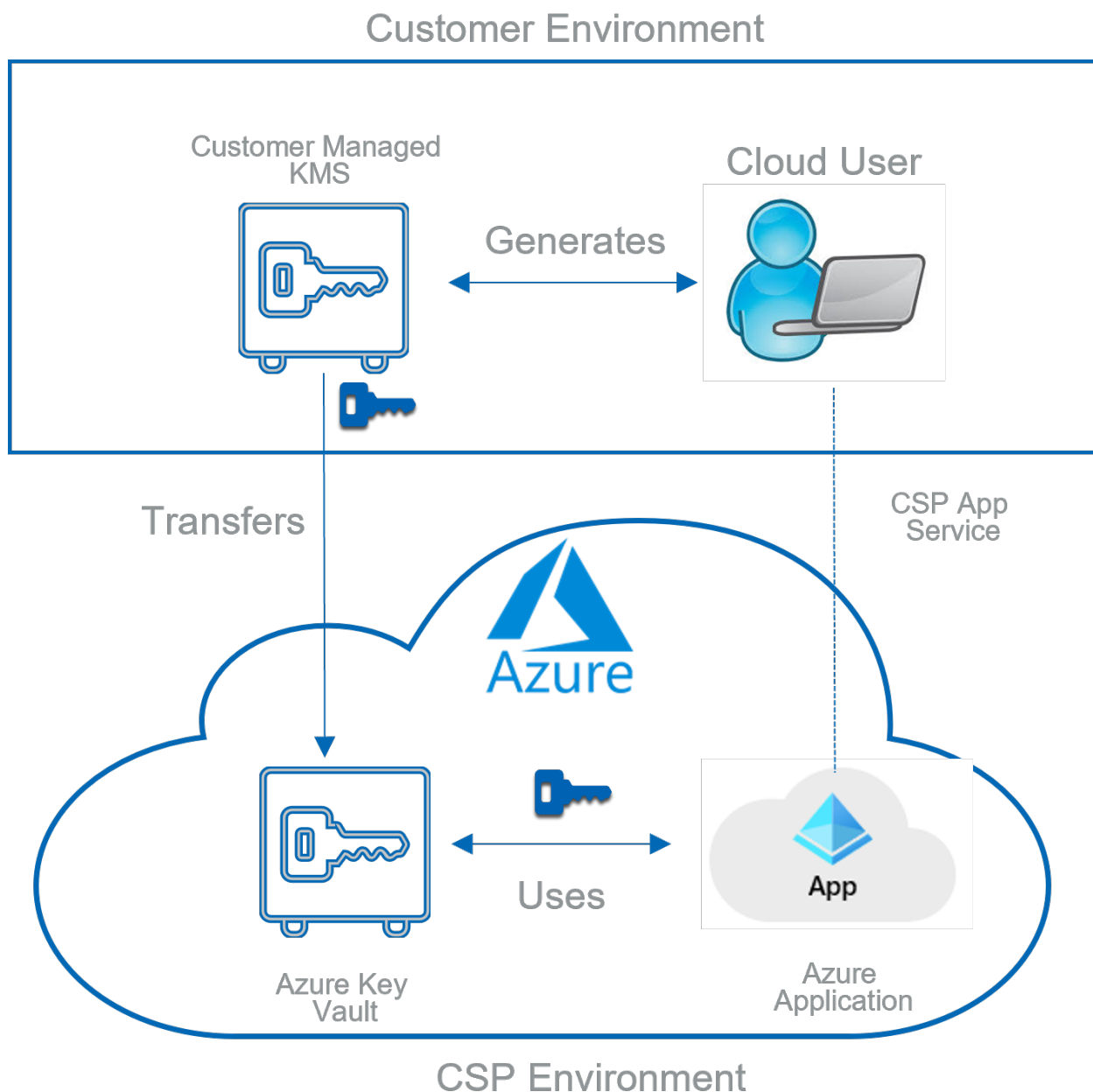


Figure 1 : Azure BYOK

1.1 Prerequisites

Before using ESKM Cloud, make sure that the following prerequisites are met:

- ESKM version must be ESKM 8.52 or higher.
- ESKM must have Internet connectivity.

Microsoft Azure Key Vault, Client ID, Tenant ID and Secret ID are required to integrate Utimaco ESKM keys with Microsoft Azure Cloud Service Provider. Ensure that the Key Vault and its credentials are created in Microsoft Azure portal and keep them readily available. Please refer to the "*Microsoft Azure BYOK - Utimaco ESKM Integration supplement*" to do the following:

- Create a Key Vault
- Register Application
- Create Secret ID
- Access Policy

2 About this Guide

2.1 Intended Audience

This guide is intended for Microsoft Azure administrators.

3 Accessing the Cloud Integration Web Console

Cloud Integration Web Console can be accessed using the following methods:

- Log in to the ESKM Management Console as an administrator and navigate to Security > Cloud Integration to access the Cloud Integration Web Console.
- The Cloud Integration Web Console opens in a new tab and automatically logs you into the cloud ESKM.

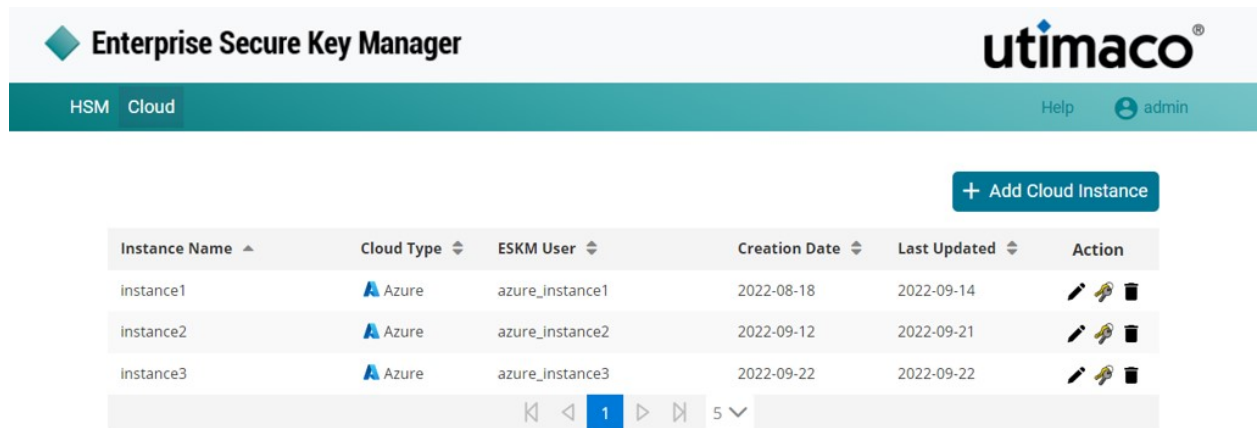


Figure 2 : Cloud Integration Dashboard

- Directly access through a web browser: using IP and port; for example, https://<ESKM IP>:8443/cloud/dashboard.

The following screen appears.



Figure 3 : Cloud Integration login

Click Login at the top right corner of the page.

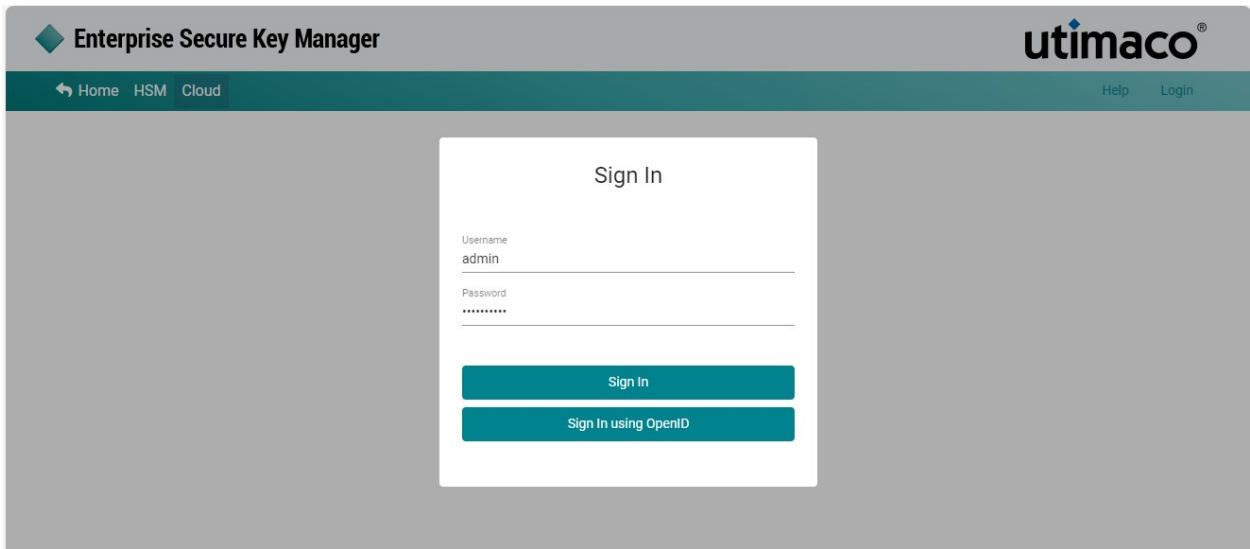


Figure 4 : Cloud Integration Sign In

Enter the Administrator Username and Password, and then click Sign In.

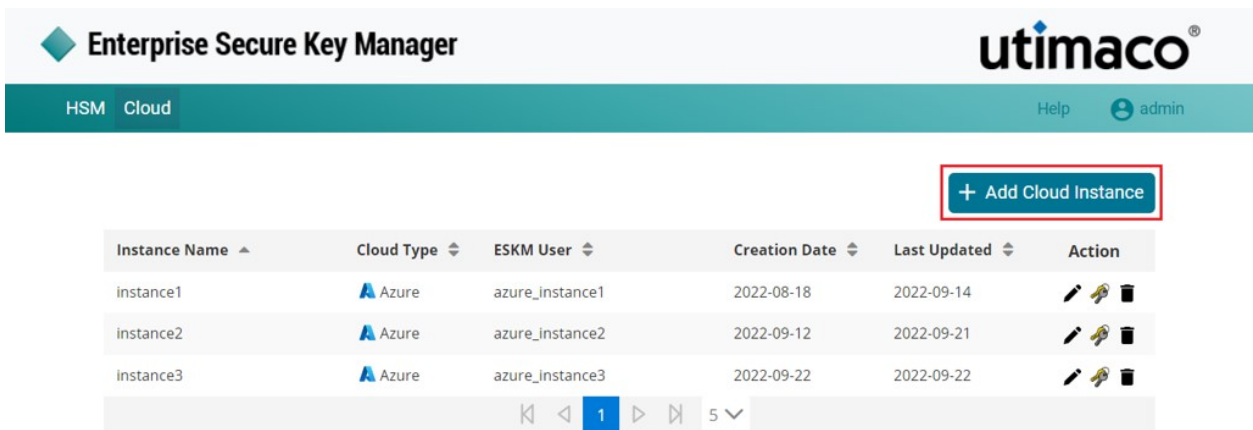


Figure 5 : Cloud ESKM-Logged In page

Cloud integration dashboard enables the user to add cloud instance and view information about the existing instances.

Sign In using OpenID

To log in to the cloud integration dashboard as OpenID administrator, you must configure the OpenID server in ESKM and create OpenID administrator accounts in ESKM. OpenID administrators are users managed by an OpenID provider.



For more information on the OpenID configuration, please refer to the ESKM_User_Guide_8.54.0.

To sign in using OpenID

Click Sign In using OpenID without user credentials.

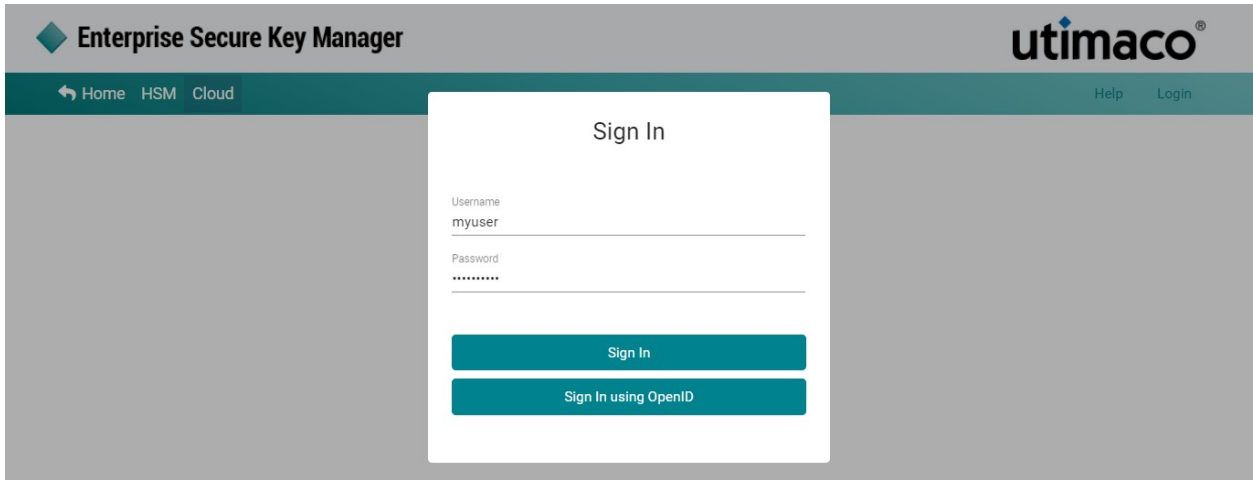


Figure 6 : Sign In Using OpenID

- You will be navigated to the Open ID Provider. Enter Username and Password. Click Sign In.
- The Cloud Integration Dashboard is displayed.

You can log out of the Cloud Integration Web Console at any time using the Logout option under Admin menu in the upper right corner.

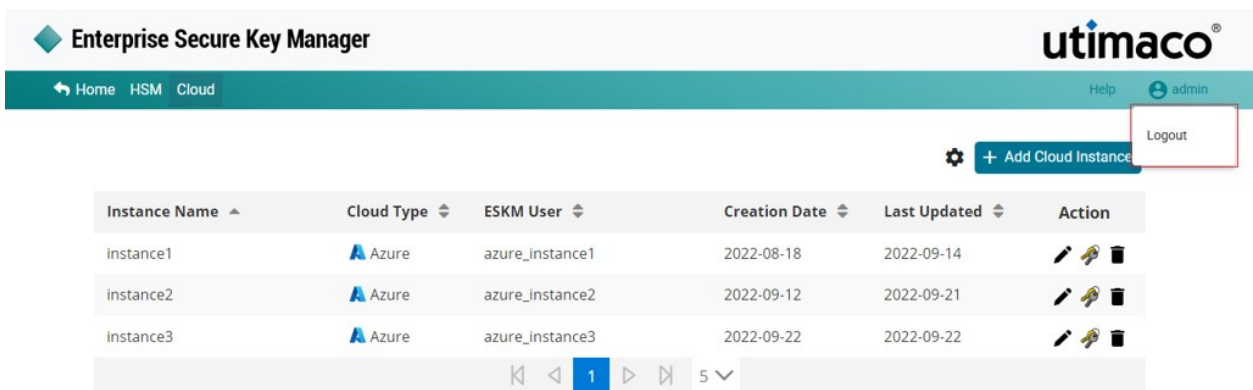


Figure 7 : Logout

When you Signed In with Open ID Cloud Integration Web Console, the Logout pop-up window is displayed. Click Logout.

In the Cloud Integration dashboard, click Left arrow at the left upper corner of the page to navigate to the ESKM application.

Enterprise Secure Key Manager utimaco[®]

[Home](#) [HSM](#) [Cloud](#) Help [admin](#)

[+ Add Cloud Instance](#)

Instance Name ▲	Cloud Type ◆	ESKM User ◆	Creation Date ◆	Last Updated ◆	Action
instance1	Azure	azure_instance1	2022-08-18	2022-09-14	
instance2	Azure	azure_instance2	2022-09-12	2022-09-21	
instance3	Azure	azure_instance3	2022-09-22	2022-09-22	

⏪ < 1 > ⏩ 5 ▼

Figure 8 : Cloud Integration Dashboard

4 Cloud Settings

This section describes the procedure to enable ESKM cloud settings.

To enable cloud settings

- Click the Settings icon on the Cloud dashboard.

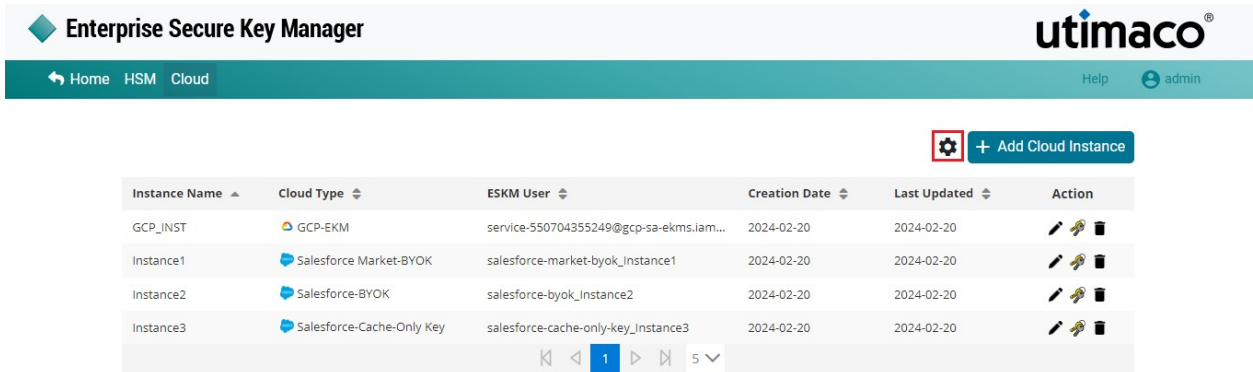


Figure 9 : Cloud Settings

- The Settings pop-up window will appear.

Settings

REST Certificate CN (used for key URI)

kms1.testeskm.com

Google KMS Service DISABLED

AWS XKS Service DISABLED

Microsoft DKE Service DISABLED

Proxy Server ENABLED

Address

172.31.1.103

Port

8080

Update
Cancel

Figure 10 : Update Settings



By default, cloud services are disabled; users must enable cloud settings as required.

- Enable the Proxy Server. Click Update.

Parameters	Description
REST Certificate CN (used for key URI)	ESKM name through which keys are accessed.

Parameters	Description
Proxy Server	Enable this to configure Proxy Server with address and port number for internet access.

Table 1: Settings - Parameters

5 Microsoft Azure Cloud Integration

This section describes the Microsoft Azure cloud integration with Utimaco ESKM. Following are the Microsoft Azure cloud integration features:

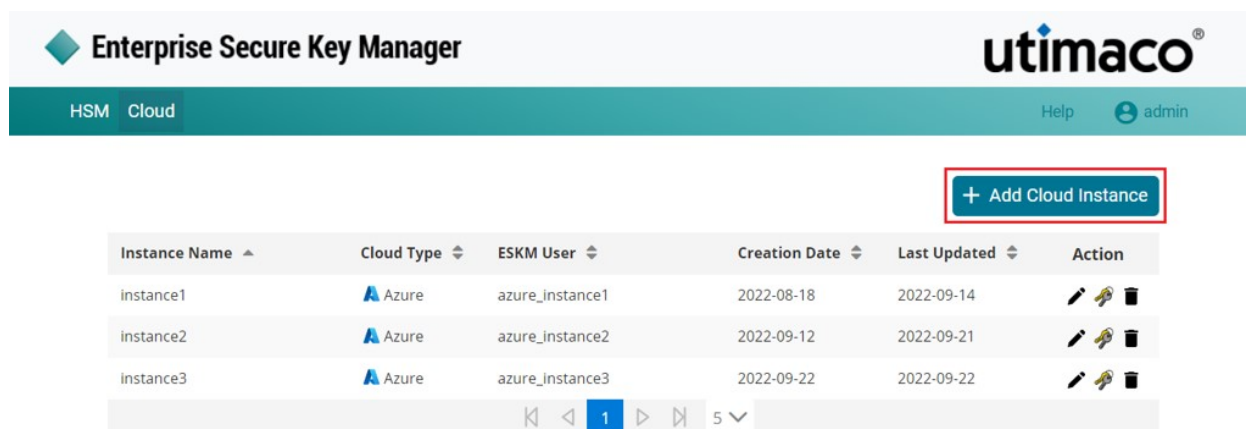
- Add New Cloud Instance
- Edit Cloud Instance
- Delete Cloud Instance
- Key Dashboard

5.1 Adding a new Cloud Instance

This section describes the procedure of adding new cloud instance.

To add new cloud instance

- Login to the Cloud Integration Web Console using any one of the methods described in Accessing the Cloud Integration Web Console.
- Click on the “+ Add Cloud Instance” icon at the top right corner of the page.

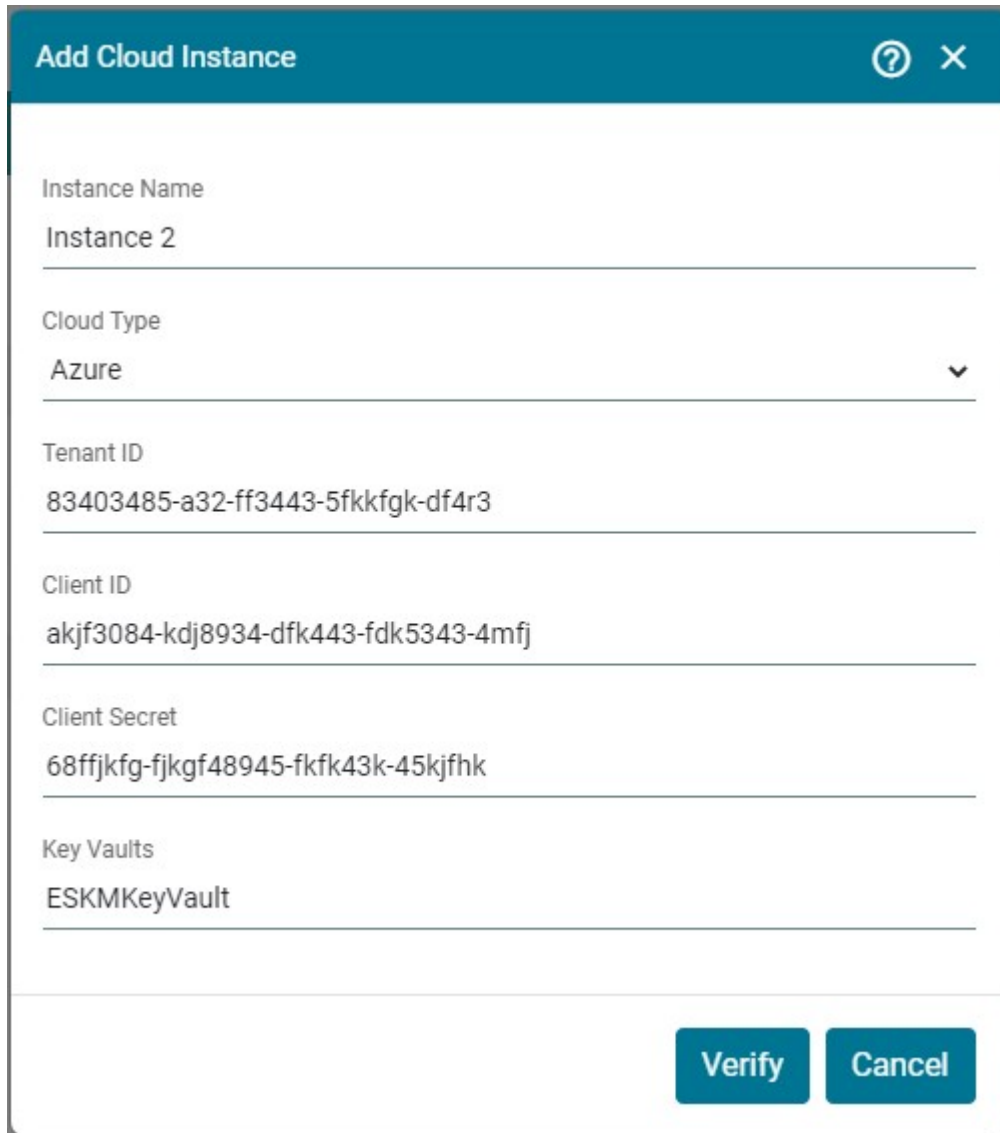


The screenshot shows the Utimaco Enterprise Secure Key Manager web console. The header includes the logo and 'utimaco' brand name. Below the header, there are navigation tabs for 'HSM' and 'Cloud', and user information for 'admin'. A table lists existing cloud instances with columns for Instance Name, Cloud Type, ESKM User, Creation Date, Last Updated, and Action. A red box highlights the '+ Add Cloud Instance' button in the top right corner of the table area.

Instance Name	Cloud Type	ESKM User	Creation Date	Last Updated	Action
instance1	Azure	azure_instance1	2022-08-18	2022-09-14	[Edit] [Share] [Delete]
instance2	Azure	azure_instance2	2022-09-12	2022-09-21	[Edit] [Share] [Delete]
instance3	Azure	azure_instance3	2022-09-22	2022-09-22	[Edit] [Share] [Delete]

Figure 11 : Add New Cloud Instance

- The Add Cloud Instance pop-up window will appear.



Add Cloud Instance ? X

Instance Name
Instance 2

Cloud Type
Azure

Tenant ID
83403485-a32-ff3443-5fkkfgk-df4r3

Client ID
akjf3084-kdj8934-dfk443-fdk5343-4mfj

Client Secret
68ffjkfg-fjkgf48945-fkfk43k-45kjfhk

Key Vaults
ESKMKeyVault

Verify Cancel

Figure 12 : Verify Cloud Instance

- Enter the Instance Name and select Cloud Type. On selection of cloud type, respective configuration fields will be loaded. In case of Microsoft Azure cloud type, enter values for Tenant ID, Client ID, Client Secret and key Vaults. Click Verify.

Add Cloud Instance ? ×

Instance Name
Instance 2

Cloud Type
Azure ▼

Tenant ID
83403485-a32-ff3443-5fkkfgk-df4r3

Client ID
akjf3084-kdj8934-dfk443-fdk5343-4mfj

Client Secret
68ffjkfg-fjkgf48945-fkfk43k-45kjfhk

Key Vaults
ESKMKeyVault

Successfully connected to the cloud instance [instance2].

Add **Cancel**

Figure 13 : Azure Cloud Instance





When the verify button is clicked without an internet connection, the error message "Invalid key vault name or failed to connect with the cloud instance" is displayed.

Components	Description
Instance Name	Instance Name is a Key Vault identifier created in Microsoft Azure Key Vault.
Cloud Type	The cloud provider with which ESKM is integrated. Here select the Cloud Type as Azure.
Tenant ID	Tenant ID is generated when Application is created in Microsoft Azure Key Vault. Copy the Tenant ID to configure the ESKM with Microsoft Azure Key Vault.
Client ID	Client ID is generated when Application is created in Microsoft Azure Key Vault. Copy the Client ID to configure the ESKM with Microsoft Azure Key Vault.

Components	Description
Client Secret	Secret value is generated when Client Secret is created in Microsoft Azure Key Vault. This key cannot be viewed once user exits from the page. Copy the secret value to configure the ESKM with Microsoft Azure Key Vault.
Key Vaults	Key Vault Name created in Microsoft Azure.

Table 2: Add Cloud Instance - Parameters

 Cloud Instance inst2 [Azure] created successfully.

 Please refer to the "*Microsoft Azure - Utimaco ESKM Integration supplement*" to create Microsoft Azure Key Vault and its credentials.

5.2 Editing a Cloud Instance

- Under Action column, click Edit icon to edit the existing cloud instances.

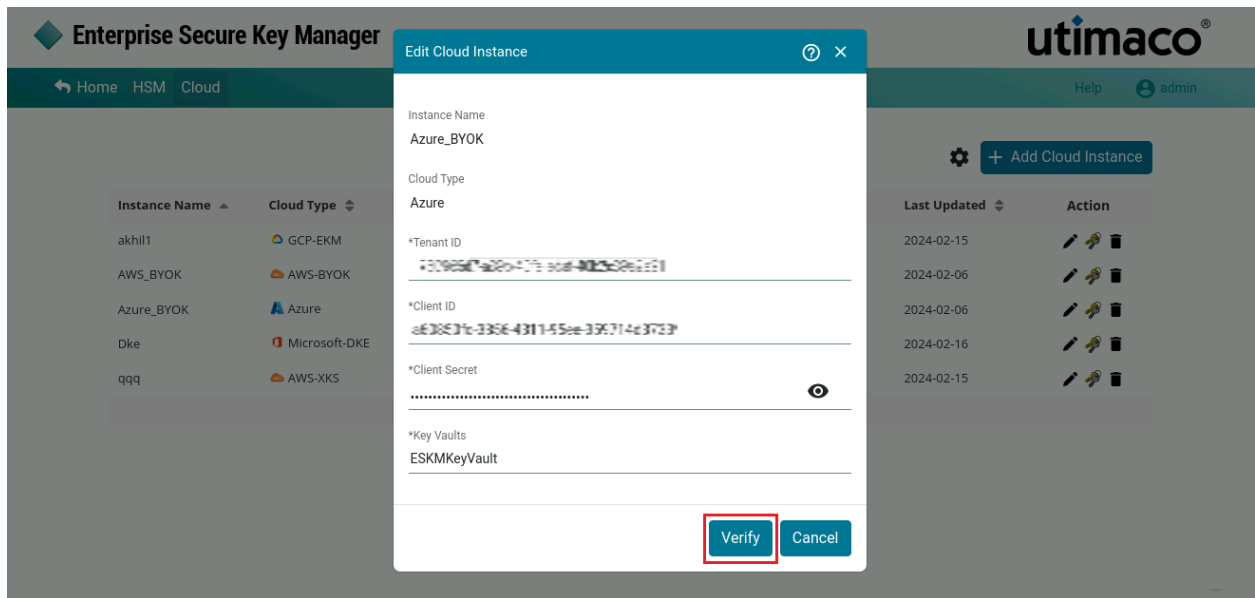


Figure 14 : Verify Cloud Instance

- The Edit Cloud Instance pop-up window will appear. Modify the existing cloud instance details if necessary and click Verify.

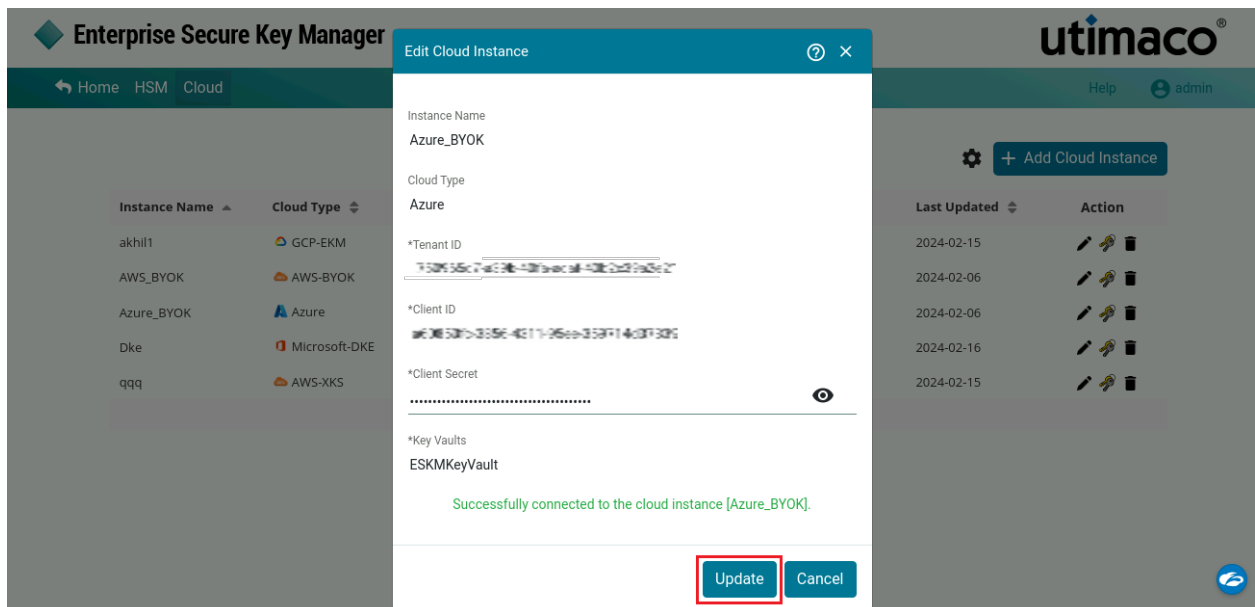
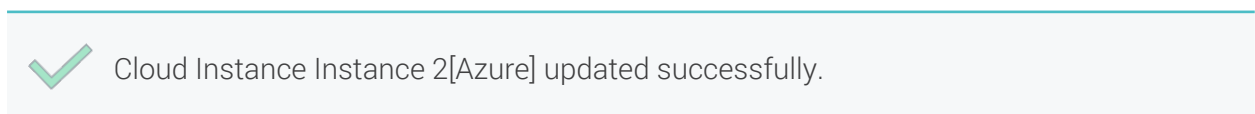


Figure 15 : Update Cloud Instance

- Click Update.



5.3 Deleting a Cloud Instance

- Under Action column, click Delete icon to delete the existing cloud instance.

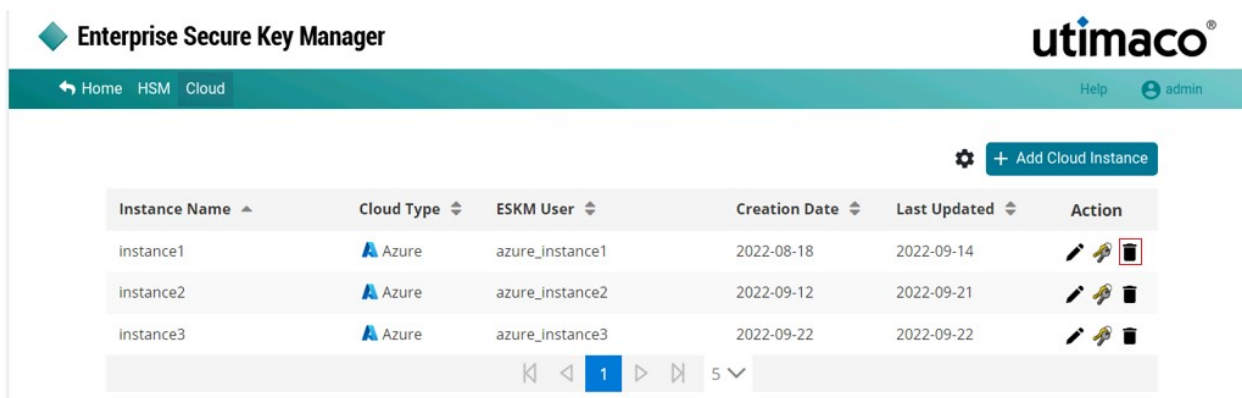
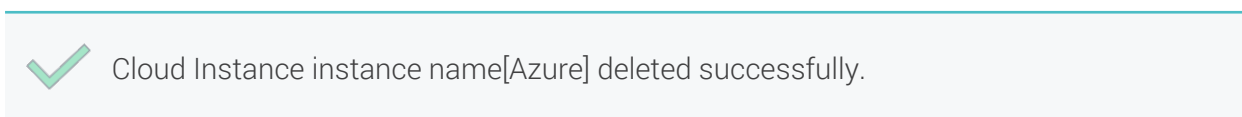


Figure 16 : Delete Cloud Instance

- The Delete Cloud Instance pop-up window will be displayed with a message reading "Are you sure you want to delete instance <instance name>?". Click Delete.



5.4 Key Dashboard

- Click the Manage Keys icon to view keys list available in the cloud instance.

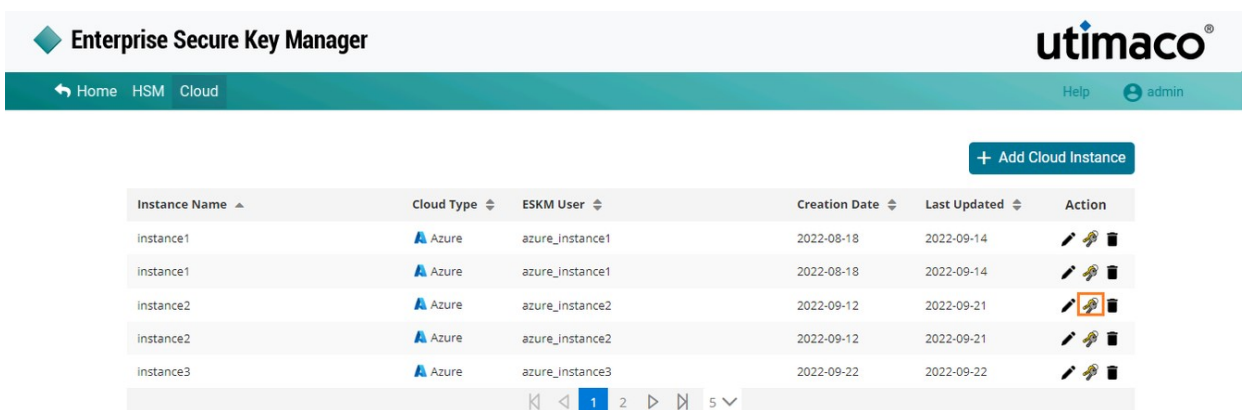


Figure 17 : Manage Keys

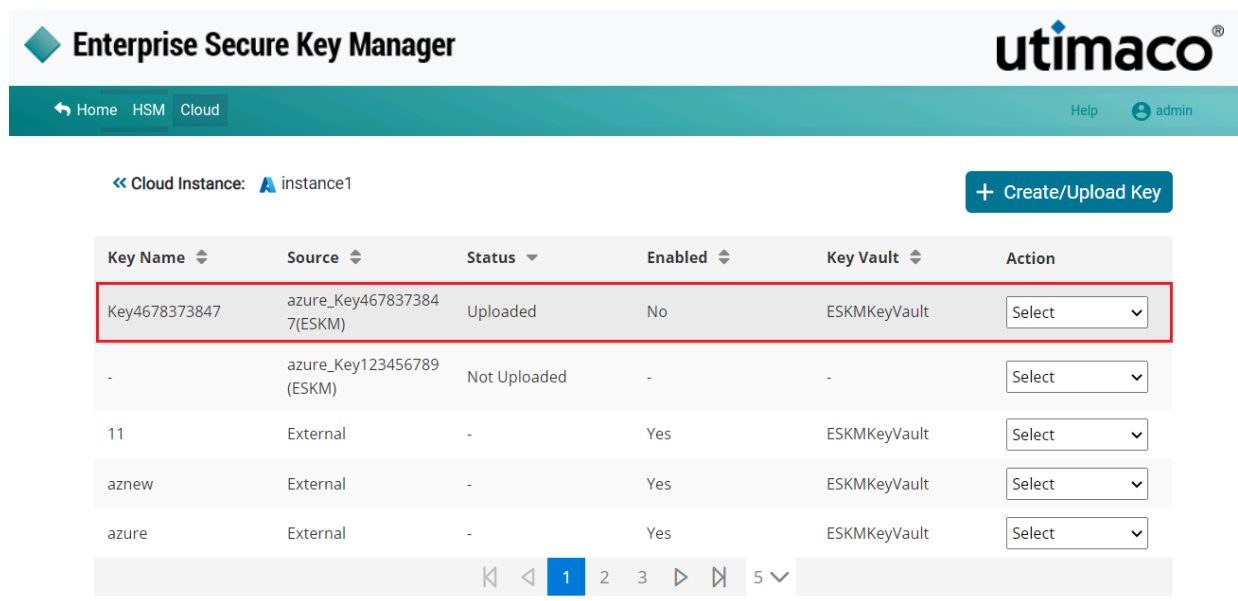


Figure 18 : Azure Keys List

- Select the key from the keys list to view key's detailed information.

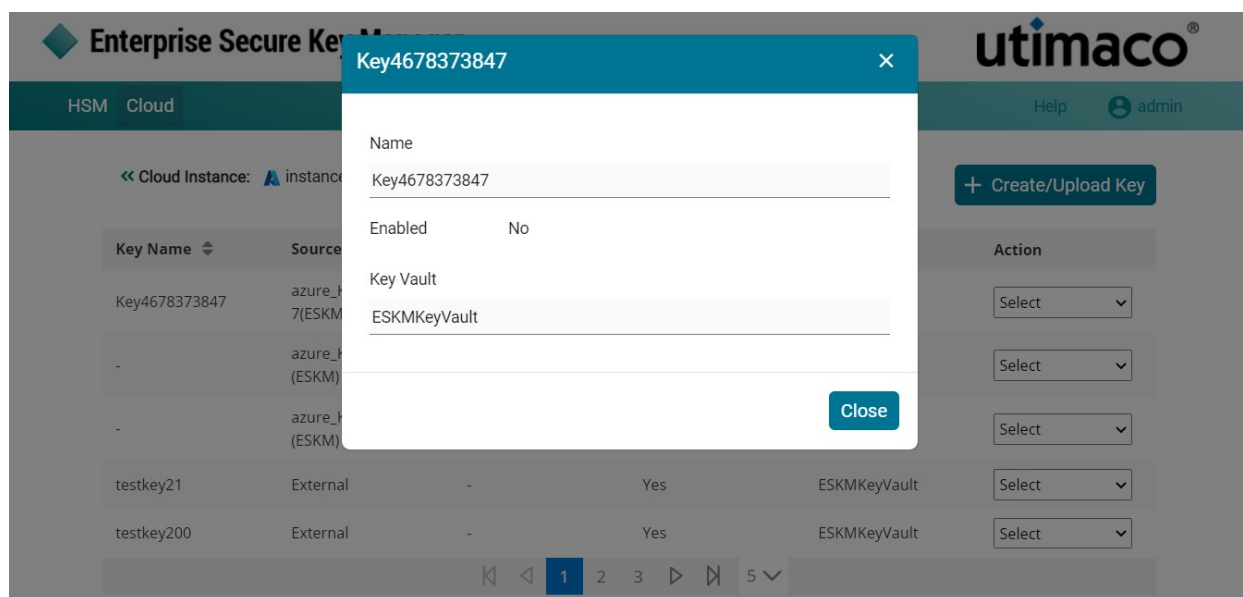


Figure 19 : View Key Details

Parameters	Description
Key Name	Name of the key.

Parameters	Description
Source	The key source indicates where key is generated. If the key was created in the ESKM, the format will be <i>Instance Name_Key Name(ESKM)</i> . If the key is created in the cloud, it will appear as external.
Status	Status of the key such as Uploaded or Not Uploaded.
Enabled	Displays either "Yes" if the key is enabled in Microsoft Azure Key Vault or "No" if the key is disabled.
Key Vault	Key Vault Name created in Microsoft Azure.
Action	It contains various key actions such as Edit, Delete and Upload.

Table 3: Cloud Instance - Keys list parameters

6 Azure Cloud Key Integration

Cloud Integration console provides you with two ways to integrate ESKM Keys: Create a new key in ESKM and upload it to Microsoft Azure Key Vault, or upload an existing Azure key from ESKM to Microsoft Azure Key Vault.

This section provides the information on the following topics:

- Create New Key
- Upload Existing Key
- Edit ESKM Key
- Delete ESKM Key

6.1 Creating a New Key

This section describes the procedure to create a new key to the ESKM Cloud.

To create a new Key

- Click the Manage Keys icon to view keys list available in the cloud instance.



Figure 20 : Create/Upload Key

- Click +Create/Upload Key button at the top right corner of the page.



Figure 21 : Key Selection



Provide a valid key name. Key names can only contain alphanumeric characters and dashes.

Parameters	Description
ESKM Key Owner	It is a key vault identifier created in Microsoft Azure key Vault.
ESKM Key Name	Name of the key.
Algorithm	Algorithm used to generate the key in ESKM.

Table 4: Key selection - Parameters

- Select Create New Key & Upload option (selected by default) to create/upload new key.
- Enter ESKM Key Name and select Algorithm from the drop down. Click Create.

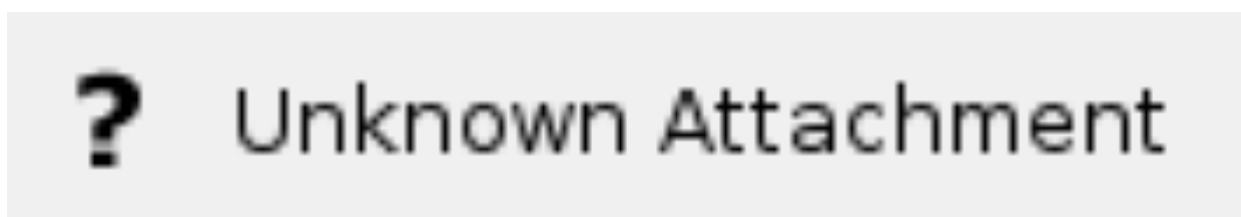


Figure 22 : Review Summary

- Review Summary and click Next. You will be navigated to Upload Key section.



Figure 23 : Upload Key

- Select the Vault Key Name (by default, its value is “select”) and fill the details such as Key Vault, Enabled, Activation Date and Expiration Date. Click Upload.

Parameters	Description
ESKM key Name	Name of the key. It combines cloud type with the ESKM key name.

Parameters	Description
Cloud Key Name	The name of the ESKM Key to be uploaded to the Microsoft Azure cloud.
Enabled	Check this box to activate the ESKM key in the Microsoft Azure key vault.
Key Vault	Name of the Key Vault created in Microsoft Azure.
Activation Date	Set the date on which the key must be activated.
Activation Date Timezone	The activation date timezone is activated based on the current time of the system.
Expiration Date	Set the expiration date by which the key must be expired.
Expiration Date Timezone	The expiration date timezone is activated based on the current time of the system.
Tags	Tag is to organize the keys in Microsoft Azure Key Vault. Multiple Tags can be assigned for a specific key.



Key [key987654321] has been successfully uploaded to Inst1 [Azure].

6.2 Uploading an Existing Key

This section describes the procedure to upload existing Keys from Utimaco ESKM to Microsoft Azure Cloud.

To upload existing key

- Click the Manage Keys icon to view keys list available in the cloud instance.

Home HSM Cloud Help admin

+ Add Cloud Instance

Instance Name	Cloud Type	ESKM User	Creation Date	Last Updated	Action
instance1	Azure	azure_instance1	2022-08-18	2022-09-14	[edit] [key icon] [trash]
instance2	Azure	azure_instance2	2022-09-12	2022-09-21	[edit] [key icon] [trash]
instance3	Azure	azure_instance3	2022-09-22	2022-09-22	[edit] [key icon] [trash]

1 5

Figure 24 : Manage Keys

- Click +Create/Upload Key button at the top right corner of the page.

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Home HSM Cloud Help admin

<< Cloud Instance: Azure_BYOK + Create/Upload Key

Key Name	Source	Status	Enabled	Key Vault	Action
key-test-1	azure_key-test-1(ESKM)	Uploaded	Yes	ESKMKeyVault	Select
key	External	-		ESKMKeyVault	Select
ggg	External	-		ESKMKeyVault	Select
fgthyhh	External	-		ESKMKeyVault	Select
eskmkey1	External	-	Yes	ESKMKeyVault	Select

5 6 7 5

Figure 25 : Keys List

- Choose "Select Existing Key" option to upload existing keys to the Cloud Instance.

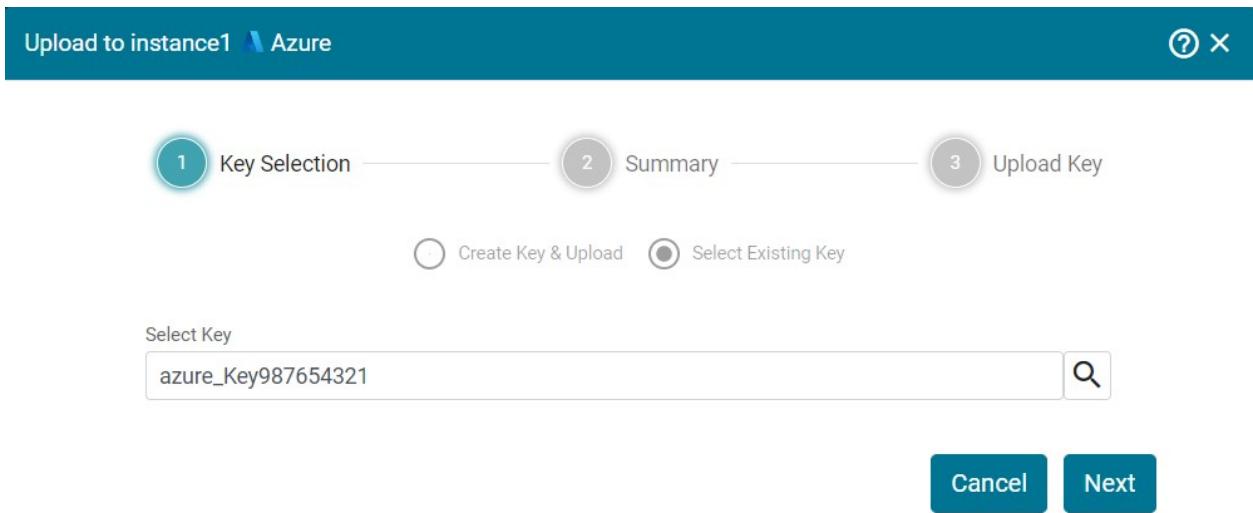


Figure 26 : Select Existing Key

- Search for and select Key that you want to upload. Click Next.

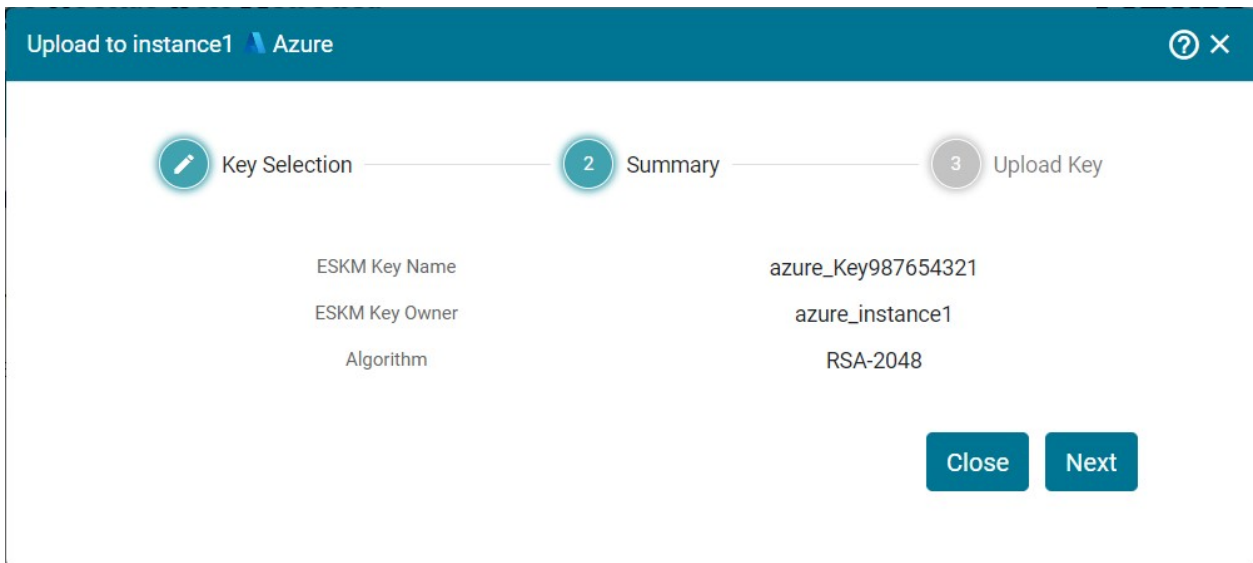


Figure 27 : Review Summary

- Now, you will be navigated to the Summary section. Review Summary and click Next.
- Enter the details such as Key Vault Name, Key Vault, Enabled, Activation Date and Expiration Date. Click Upload.

Upload to instance1 \ Azure
? x

1 Key Selection ————— 2 Summary ————— 3 Upload Key

ESKM Key Name
azure_Key987654321

*Cloud Key Name
Key987654321

Enabled

*Key Vault
ESKMKeyVault ▼

Activation Date
20-10-2022 16:26 📅

Activation Date Timezone
US/Pacific (-07:00) ▼

Expiration Date
31-10-2022 16:26 📅

Expiration Date Timezone
US/Pacific (-07:00) ▼

Tags

Name	Value	+

Cancel
Upload

Figure 28 : Upload Existing Key

✓ Key [Key987654321] has been successfully uploaded to instance1 [Azure].

6.3 Upload Key from ESKM to Azure Cloud

- Click the Manage keys icon in the cloud instance to view the keys available in the cloud instance.

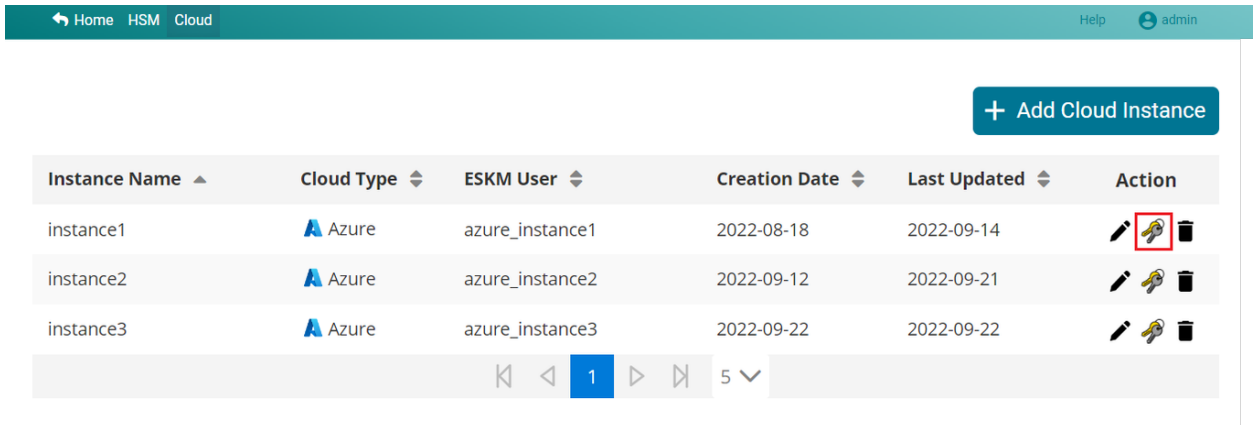


Figure 29 : Manage Keys

- If the key is not uploaded from ESKM to Cloud and you wish to upload, select Upload from the drop-down.

Enterprise Secure Key Manager

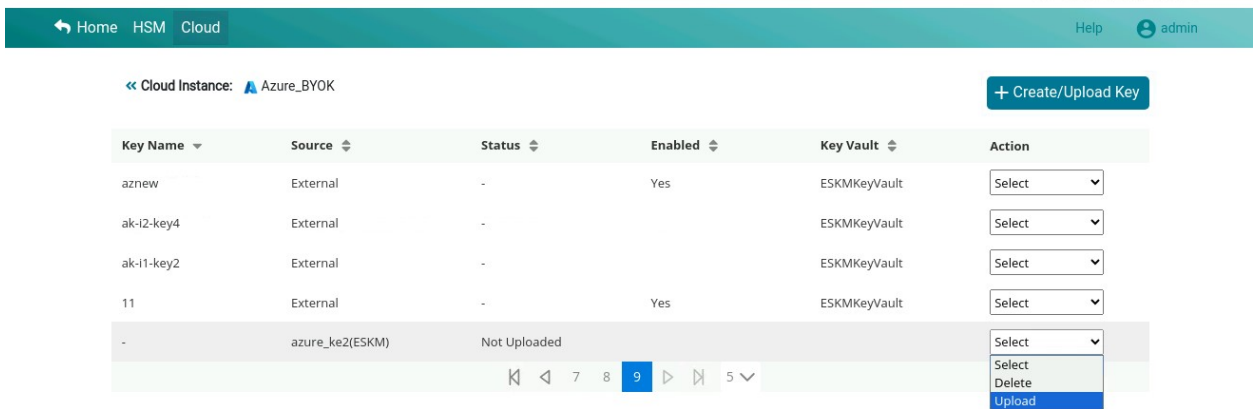


Figure 30 : Upload Key from ESKM to Cloud

- The Upload key pop-up window appears. Make the necessary changes and click Upload.

Upload key (azure_11) to Azure ✕

ESKM Key Name
azure_11

*Cloud Key Name
11

Enabled

*Key Vault
ESKMKeyVault

Activation Date
22-09-2022 00:59

Activation Date Timezone
Asia/Calcutta (+05:30)

Expiration Date
30-09-2022 00:59

Expiration Date Timezone
Asia/Calcutta (+05:30)

Tags

Name	Value
------	-------

+

Cancel **Upload**

Figure 31 : Upload Azure Key

Cannot upload the same key that has been deleted and purged from the cloud.

Key[key name] has been successfully uploaded to instance name[Azure].

6.4 Deleting an ESKM Key

- Click the Manage keys icon in the cloud instance and select Delete from the drop down.

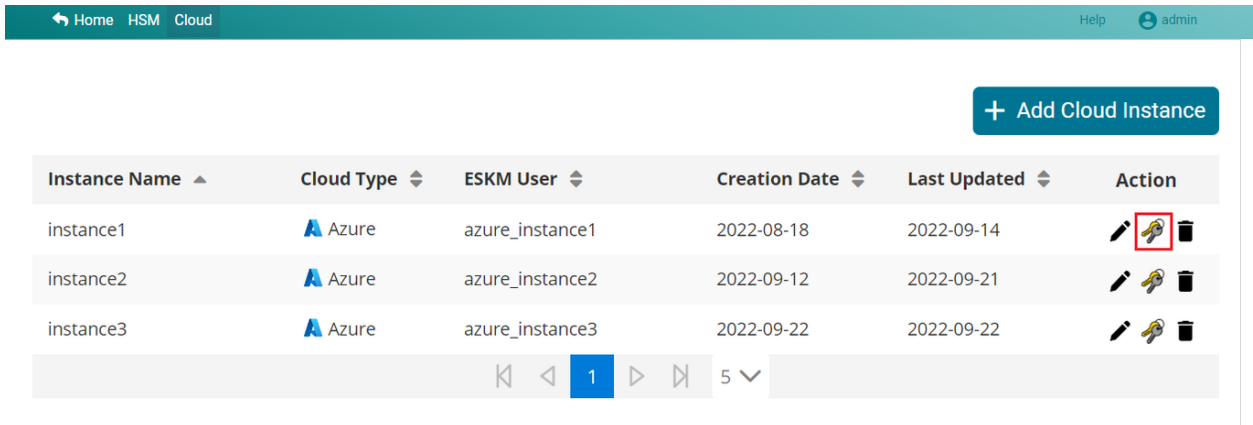


Figure 32 : Manage Keys

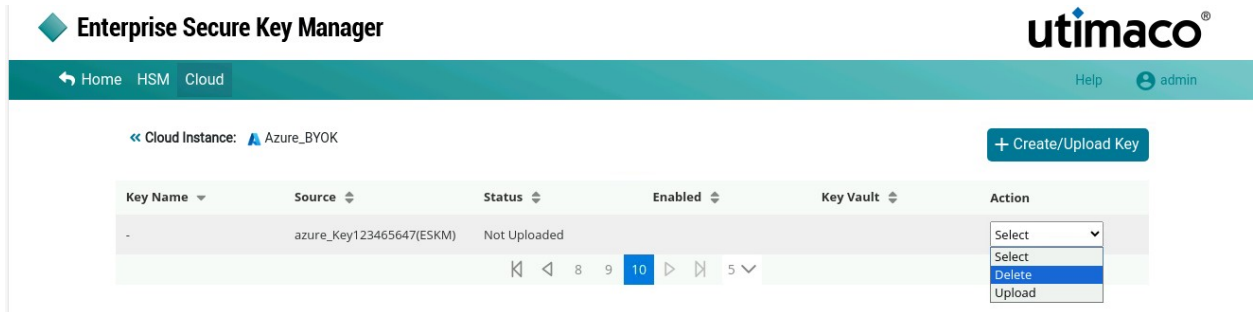


Figure 33 : Delete Keys

- If the selected key is uploaded and is not associated with any other instance, a pop-up window will appear with a message “Are you sure you want to delete key (Key987654321) from instance1 (Azure) ?”.

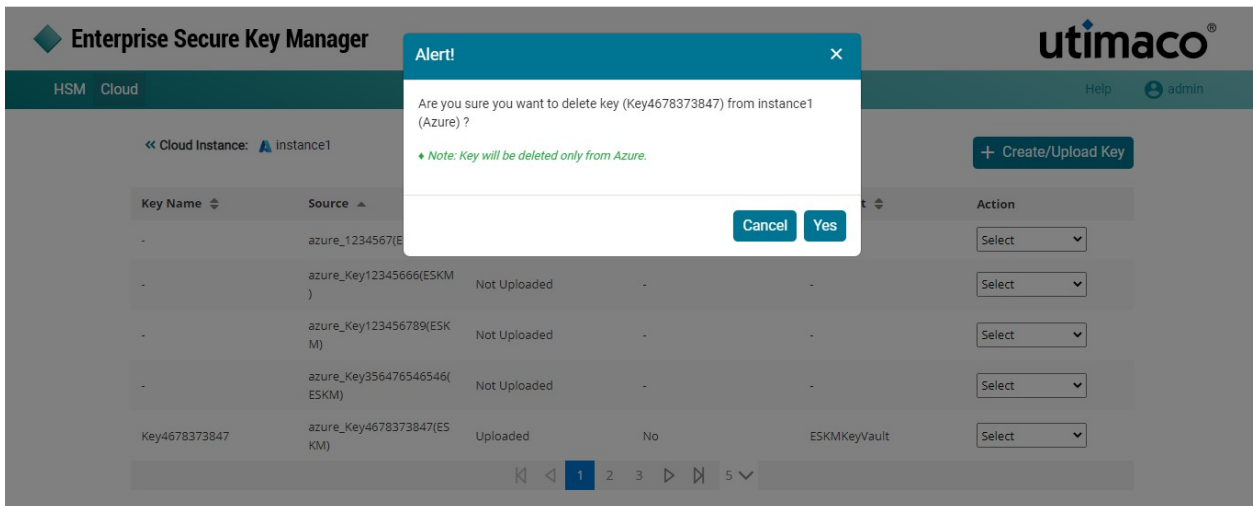


Figure 34 : Delete Key from Cloud

- a. Click Yes and the key will be deleted from the cloud.

- If the key is uploaded and associated with another instance, a pop-up window will appear with a message “ Are you sure you want to delete key (azurekey15) from instance1 (Azure) ?”.

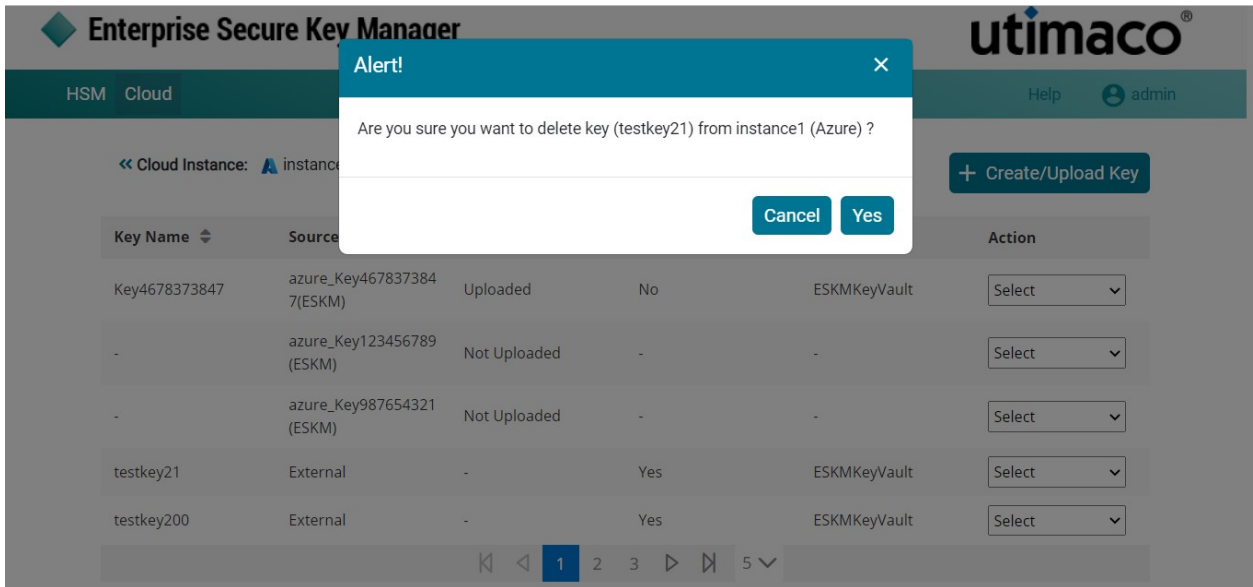


Figure 35 : Delete External Key from Cloud

a. Click Yes and the key will be deleted from Cloud.

- If the selected key is not uploaded and is not associated with another instance, a popup window will appear with a message “Are you sure you want to delete key [azure_11] from ESKM ?”.

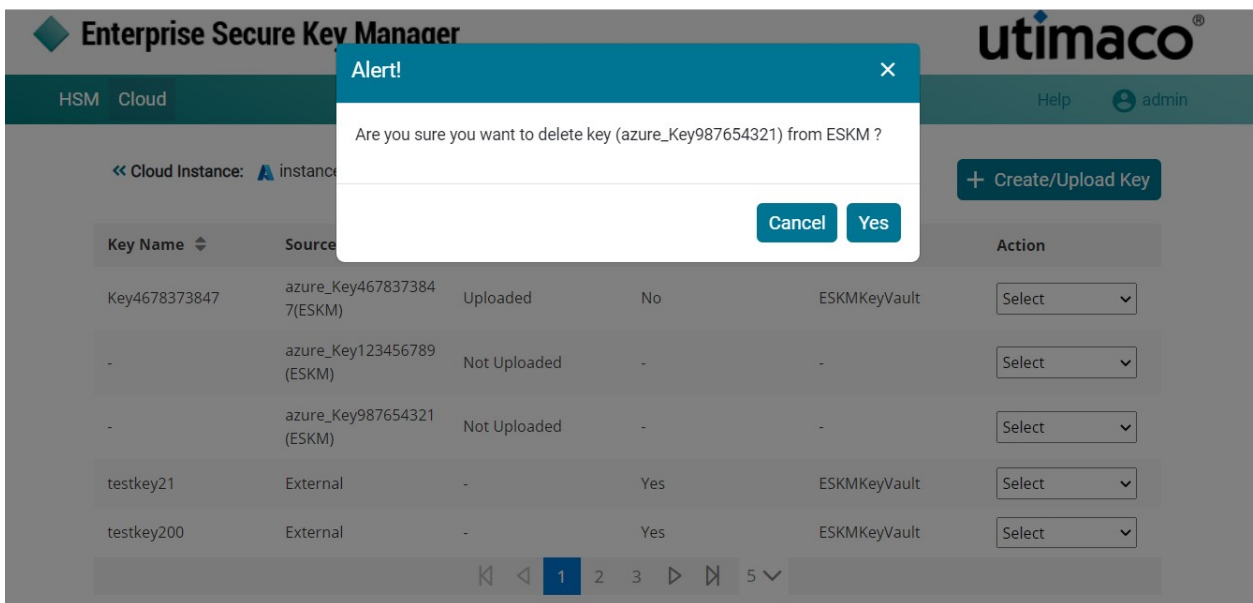


Figure 36 : Delete key from ESKM

- a. Click Yes and the key will be deleted from ESKM.



Cloud Instance key [key name] removed successfully from instance1 [Azure].

6.5 Editing an ESKM Key

- Select Edit from the drop-down on the cloud instance page to modify the selected key information.




Figure 37 : Edit Key

- Make the required modification and enable or disable the selected key.



Figure 38 : Edit Azure Key

- Click Save.



Cloud Instance key [azure_key4678373847] updated successfully.

7 Microsoft Azure BYOK API Commands

The following APIs have been implemented to support Microsoft Azure BYOK..

- Get Keys
- Get Key
- Import Key
- Update Key Delete Key

For more information, please see the following link:

<https://learn.microsoft.com/en-us/rest/api/keyvault/?view=rest-keyvault-keys-7.4>

8 Contact and Support Information

You can reach us from Monday to Friday, 09.00 a.m. to 05.00 p.m., Central European Time (CET).

Utimaco IS GmbH
Krefelder Str. 220
52070 Aachen
Germany

RMA Query

If you need to send the device back to Utimaco IS GmbH, please open a new RMA case (Return Merchandise Authorization). We request that you use the following web address. RMA cases cannot be opened by email or phone.

<https://support.hsm.utimaco.com/support/rma/new>

Other Support Queries

- Mail (preferred contact method)
support@utimaco.com
Attach the diagnostic information to your email.
- Web portal
<https://support.hsm.utimaco.com/support/cases/new/>
The diagnostic information will be requested in our response if necessary.
- By phone
AMERICAS +1-844-UTIMACO (+1 844-884-6226)
EMEA +49 800-627-3081
APAC +81 800-919-1301
The diagnostic information will be requested in our response if necessary.