Cisco ACI HTML5 vCenter Plug-in Guide

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New and Changed Information

The following table provides an overview of the significant changes up to this current release of the Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in.

Table 1: New Features and Changed Behavior for the Cisco ACI HTML5 vCenter plug-in

Cisco ACI HTML5 vCenter plug-in Release	Feature	Description
1.0.2	VMware vSphere 7.0 support	You can use the Cisco ACI HTML5 vCenter plug-in with VMware vSphere 7.0 as well as with VMware vSphere 6.7 Update 2.
1.0.2	The new version of Cisco ACI HTML5 vCenter plug-in works with HTML5 instead of Flash.	The new version of the Cisco ACI HTML5 vCenter plug-in features a new GUI and new features: • Support for creating a port group on VMware vCenter • Support for multiple fabrics in VMware vCenter • Support for connecting a read-only virtual machine manager (VMM) domain to an endpoint group (EPG) Also see *Cisco ACI HTML5 vCenter Plug-in Release Notes, Release 1.0.1* on Cisco.com.

Cisco ACI HTML5 vCenter Plug-in

Cisco ACI HTML5 vCenter Plug-in with VMware vSphere Client

The Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in is a user interface that allows you to manage the Cisco ACI fabric from within the VMware vSphere Client.

The plug-in enables you to use the VMware vSphere Client to configure both VMware vCenter and the Cisco ACI fabric. With the Cisco ACI HTML5 vCenter plug-in, virtualization administrators can define network connectivity independently of the networking team while sharing the same infrastructure.

The Cisco ACI vCenter plug-in, available since Cisco Application Policy Infrastructure Controller (APIC) Release 2.0(x), was designed to work with Adobe Flash. However, at the end of 2020, Adobe will stop updating Flash. Beginning with the VMware vSphere 6.7 release, a new version of the plug-in uses HTML5 instead of Flash.

The new Cisco ACI HTML5 vCenter plug-in has a new GUI and new features, including support of multiple fabrics. This document includes instructions for installing the Cisco ACI HTML5 vCenter plug-in and using it to make basic configurations for virtual machines.

The plug-in, which does not change existing integration of Cisco ACI with VMware vCenter, is stateless, fetching but not storing information from Cisco APIC. The Cisco ACI HTML5 vCenter plug-in allows you to configure tenants, application profiles, EPGs, contracts, filters, VRFs, and bridge domains from the VMware vSphere Client.

Cisco ACI HTML5 vCenter Plug-in Features

The Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in adds a new view to the VMware vSphere Client GUI called **Cisco ACI Fabric**. The GUI enables you to perform basic Cisco ACI configurations.

You can create, update and delete the following:

- Tenant

- Application profile

- Virtual Routing and Forwarding context (VRF)

- Bridge domain

- Endpoint group (EPG)

- Filter

- Contract

For more information, see Configuring Cisco ACI in VMware vCenter, on page 19.

You can also use the Cisco ACI HTML5 vCenter plug-in to install, upgrade, and uninstall the Cisco ACI Virtual Edge. See the *Cisco ACI Virtual Edge Installation Guide, Release 3.0(x)* on Cisco.com.

The **Cisco ACI Fabric** view in VMware vCenter also enables you to view the status and health of the Cisco ACI fabric and the objects that you configure.

Note   No configuration of in-depth networking is done through the Cisco ACI HTML5 vCenter plug-in. Only the elements that are relevant to virtualization administrators are exposed.

CHAPTER **3**

Getting Started with the Cisco ACI HTML5 vCenter Plug-in

Getting Started with the Cisco ACI HTML5 vCenter Plug-in

Getting started with the Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in requires that you complete a series of steps:

• Fulfill all the prerequisites.

See Prerequisites for Installing the Cisco ACI HTML5 vCenter Plug-in, on page 6.

• Download the Cisco ACI HTML5 vCenter plug-in software and save it on a web server (see download instructions based on the release, as indicated below).

See Download the Cisco ACI HTML5 vCenter Plug-in Software (for releases prior to ACI HTML Plug-in Release 1.0.6), on page 6.

See Download the Cisco ACI HTML5 vCenter Plug-in Software (for ACI HTML Plug-in Release 1.0.6), on page 7.

• Run the installation script so VMware vCenter can install and deploy the plug-in.

See Install the Cisco ACI HTML5 vCenter Plug-in, on page 8.

• Connect the plug-in to your Cisco ACI fabric in VMware vCenter.

See Connecting the Cisco ACI HTML5 vCenter Plug-in to your Cisco ACI Fabric , on page 10.

Prerequisites for Installing the Cisco ACI HTML5 vCenter Plug-in

Fulfill the following prerequisites before you install the Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in.

- Ensure that you have a web server to host the Cisco ACI HTML5 vCenter plug-in file and that the VMware vCenter can reach it.

- Ensure that a Windows server with the VMware PowerCLI module is installed to run the installation script.

- Ensure that at least one virtual machine manger (VMM) domain exists between the Cisco APIC and the VMware vCenter where you will use the plug-in.

  For more information, see the *Cisco Application Centric Infrastructure Fundamentals Guide*.

- Ensure that you have the following software installed:

    - VMware vSphere Client: Version 6.7 Update 2 or Version 7.0.

- VMware vCenter: Cisco APIC supports any version of Linux Appliance and Windows Server that VMware supports. See VMware documentation for details.

- Cisco APIC: Release 3.2(2x) and later.

- VMware PowerCLI: Version 11.2.0 or later.

In addition, so you can use the Cisco ACI HTML5 vCenter plug-in after it is installed, ensure that you have VMware vCenter credentials.

Download the Cisco ACI HTML5 vCenter Plug-in Software (for releases prior to ACI HTML Plug-in Release 1.0.6)

This section describes how to download the Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in. This procedure is applicable for releases prior to ACI HTML Plug-in release 1.0.6).

The following task is applicable for ACI HTML plug-in releases prior to release 1.0.6.

Before you begin

You must have completed the tasks in the section Prerequisites for Installing the Cisco ACI HTML5 vCenter Plug-in, on page 6.

Step 1   Go to the Application Policy Infrastructure Controller (APIC) Software Download page.

Step 2   In the **Select a Software Type** area, click **ACI vCenter plugin**.

Step 3   On the **ACI vCenter plugin** page, choose the desired release in the left-hand menu, and then choose and download the plug-in.

You must save the Cisco ACI HTML5 vCenter plug-in file on an HTTPS web server that the VMware vCenter can reach.

What to do next

Install the Cisco ACI HTML5 vCenter plug-in in VMware vCenter. See Install the Cisco ACI HTML5 vCenter Plug-in, on page 8.

Download the Cisco ACI HTML5 vCenter Plug-in Software (for ACI HTML Plug-in Release 1.0.6)

This section describes how to download the Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in.

The following task is applicable for ACI HTML plug-in release 1.0.6.

Before you begin

Complete the tasks in the section Prerequisites for Installing the Cisco ACI HTML5 vCenter Plug-in, on page 6. Also, ensure that you have Python installed on your local machine. The minimum version required is Python 3. You can check if Python is installed on your machine using the following command:

```
$ python3 --version
Python 3.9.6
```

Beginning with Cisco ACI HTML5 vCenter Plug-in release 1.0.6, the ACI HTML5 plug-in zip file used for installing the plugin on vCenter (vcplugin-1.0.6.zip) is enclosed inside an outer zip file, `vcplugin-rel-1.0.6.zip`. Ensure to use the inner `vcplugin-1.0.6.zip` file with the install script to successfully install vcplugin, 1.0.6 on vCenter.

Step 1   Go to the Application Policy Infrastructure Controller (APIC) Software Download page.

Step 2   In the **Select a Software Type** area, click **ACI vCenter plugin**.

Step 3   On the **ACI vCenter plugin** page, choose the desired release in the left-hand menu, and then choose and download the plug-in (`vcplugin-rel-1.0.6.zip`).

Step 4   Unzip the outer `vcplugin-rel-1.0.6.zip` file to extract the contents:

```
$ unzip vcplugin-rel-1.0.6.zip
Archive: vcplugin-rel-1.0.6.zip
extracting: vcplugin-1.0.6.zip
extracting: vcplugin-1.0.6.zip.signature
inflating: ACI_4070389ff0d61fc7fbb8cdfdec0f38f30482c22e.PEM inflating: cisco_x509_verify_release.py3
```

Step 5   Verify the signature.

Verify the signature for the release-key signed vcplugin image.

```
$ ./cisco_x509_verify_release.py3 -e ACI_4070389ff0d61fc7fbb8cdfdec0f38f30482c22e.PEM -i
vcplugin-1.0.6.zip -s vcplugin-1.0.6.zip.signature -v dgst -sha512
Retrieving CA certificate from https://www.cisco.com/security/pki/certs/crcam2.cer ...
Successfully retrieved and verified crcam2.cer.
```

```
Retrieving SubCA certificate from https://www.cisco.com/security/pki/certs/innerspace.cer ...
Successfully retrieved and verified innerspace.cer.
Successfully verified root, subca and end-entity certificate chain.
Successfully fetched a public key from ACI_4070389ff0d61fc7fbb8cdfdec0f38f30482c22e.PEM.
Successfully verified the signature of vcplugin-1.0.6.zip using
ACI_4070389ff0d61fc7fbb8cdfdec0f38f30482c22e.PEM
```

You must save the Cisco ACI HTML5 vCenter plug-in file on an HTTPS web server that the VMware vCenter can reach.

What to do next

Install the Cisco ACI HTML5 vCenter plug-in in VMware vCenter. See .

Install the Cisco ACI HTML5 vCenter Plug-in

This section describes how to install the Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in so the VMware vCenter can deploy it.

Note   The installation process is different for ACI HTML Plug-in Release 1.0.6 and releases prior to release 1.0.6. Check for release-specific information, as indicated.

(**for releases prior to ACI HTML Plug-in Release 1.0.6**)

The plug-in (to install in VMware vCenter) is delivered in the format `vcplugin-1.0.x.zip`. You can also separately download the install/upgrade script, **ACIPlugin-Install.ps1**, and the uninstall script, **ACIPlugin-Uninstall.ps1**, from the same location as the plug-in file.

- `README`: Contains installation instructions and references to the documentation.

- `vcenter-plugin-x.x.x.zip`: Is the plug-in to install in VMware vCenter.

- `ACIPlugin-Install.ps1`: Is the script to manage the installation and upgrade of the plug-in.

- `ACIPlugin-Uninstall.ps1`: Is the script to manage uninstallation of the plug-in

(**for ACI HTML Plug-in Release 1.0.6**) The plug-in is delivered as a .zip archive in the format `vcplugin-rel-x.x.x.zip`. The archive includes the following:

- `vcplugin-x.x.x.zip`: Is the plug-in to install in VMware vCenter

- `ACI_4070389ff0d61fc7fbb8cdfdec0f38f30482c22e.PEM` : Public key for release signature validation

- `cisco_x509_verify_release.py3`: Python script for signature validation

- `vcplugin-1.0.6.zip.signature` : Signature file for plugin

- Download the installation scripts separately from Cisco.com:

    - `ACIPlugin-Install.ps1`: Is the script to manage the installation and upgrade of the plug-in.

    - `ACIPlugin-Uninstall.ps1`: Is the script to manage uninstallation of the plug-in

Before you begin

- You must complete the tasks in the section Prerequisites for Installing the Cisco ACI HTML5 vCenter Plug-in, on page 6.

- You must download the Cisco ACI HTML5 vCenter plug-in; see Download the Cisco ACI HTML5 vCenter Plug-in Software (for releases prior to ACI HTML Plug-in Release 1.0.6), on page 6.

- You must download the Cisco ACI HTML5 vCenter plug-in; see Download the Cisco ACI HTML5 vCenter Plug-in Software (for ACI HTML Plug-in Release 1.0.6), on page 7.

Step 1 Open a VMware PowerCLI console.

Step 2 Run the installation script by completing the following steps:

a) Run the `ACIPlugin-Install.ps1` script.

b) When prompted, in the `vCenter IP / FQDN field`, enter the VMware vCenter where the plug-in needs to be installed.

c) When prompted, In the `Plugin .zip file URL` field, enter the URL where the VMware vCenter will be able to download the plug-in.

   Ensure you have not renamed the `.zip` file.

d) In the console pop-up window, enter your credentials for the VMware vCenter.

   You can use any VMware vCenter user credentials so long as you have the correct permissions to install the plug-in. Typically, you can use administrator credentials.

   VMware vCenter installs and registers the Cisco ACI HTML5 vCenter plug-in.

Note   During installation, you may see the following error on the console:

```
Error: Invalid server certificate. Use Set-PowerCLIConfiguration to set the value for the
 InvalidCertificationAction option to Prompt if you'd like to connect once or to add a
permanent exception for this server.
```

To avoid seeing this error, enter the following command before installation:

`Set-PowerCLIConfiguration -InvalidCertificateAction Ignore -Confirm:$false`

Step 3 Log into the VMware vSphere Client after the installation is completed.

The first login can take a while because the VMware vCenter downloads the Cisco ACI HTML5 vCenter plug-in from the web server and then deploys it.

Once the VMware vSphere Client loads, you can see the Home page. You can access the **Cisco ACI Fabric** in the left navigation area or from the **Menu** drop-down list at the top of the page. The **Cisco ACI Fabric** link is where you begin to manage your allows you to manage your Cisco ACI fabric.

Note   After you install the Cisco ACI HTML5 vCenter plug-in, when you launch the VMware vSphere Client for the first time, you might see an error message asking you to reload the client. Click **Reload** to refresh the page; the error message will not appear again.

What to do next

Connect the Cisco ACI HTML5 vCenter plug-in to a Cisco ACI fabric. See Connecting the Cisco ACI HTML5 vCenter Plug-in to your Cisco ACI Fabric , on page 10.

Connecting the Cisco ACI HTML5 vCenter Plug-in to your Cisco ACI Fabric

This section describes how to connect the Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in to your Cisco ACI fabric. Once you have done so, you can use the plug-in to perform basic configurations in VMware vCenter.

Note The registration is VMware vCenter-wide and it does not take into account the user that performs it. It is a configuration for the whole VMware vCenter, not just for the logged-in user who performs it.

You can connect the plug-in to your Cisco ACI fabric, using one of the following ways:

- Connect the Cisco ACI HTML5 vCenter Plug-in with a Self-Signed Certificate, on page 10
- Connect the Cisco ACI HTML5 vCenter Plug-in with Your Username and Password, on page 11
- Connect the Cisco ACI HTML5 vCenter Plug-in Using a Previous Login, on page 12.

Note If you connect using a previous login, you can connect only a fabric that you have connected to previously. Connecting with an IP address or a self-signed certificate enable you to connect to a fabric that you have not connected to previously as well as one you have connected to.

Connect the Cisco ACI HTML5 vCenter Plug-in with a Self-Signed Certificate

This section describes how to connect the Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in to your Cisco ACI fabric using a self-signed certificate.

Before you begin

You must have fulfilled the requirements in the section Prerequisites for Installing the Cisco ACI HTML5 vCenter Plug-in, on page 6.

Step 1 Log into the VMware vSphere Client.

Step 2 Click **Cisco ACI Fabric**, either in the left navigation pane or from the **Menu** pull-down menu.

Step 3 In the upper right of the fabric work pane, click + **FABRIC**.
The **Login to another Fabric** dialog box appears. It enables you to choose an authentication method and register your fabric with VMware vCenter.

Step 4 In the **Login to another Fabric** dialog box, complete the following steps:

 a) In the **APIC IP / FQDN** area, in the **APIC IP / FQDN** field, enter your Cisco Application Policy Infrastructure Controller (APIC) IP address.

 b) In the **Fabric Name** field, enter a name for the new fabric.

 c) In the **CREDENTIALS** area, from the drop-down menu, choose **Generate self-signed certificate**.

    d) In the **Username** field, enter the username that you want to use for the certificate.

    e) In the **Certificate name** field, enter a name for the certificate.

    f) Click **GENERATE**.
The dialog box displays a message that the certificate was generated successfully, followed by the text of the certificate itself.

    g) Copy the certificate, making sure to include `-----BEGIN CERTIFICATE-----` and `-----end CERTIFICATE-----`.

Step 5   Log in to Cisco APIC.

     Do not log out of or close VMware vCenter.

Step 6   Go to **Admin** > **AAA** > **Users**.

Step 7   In the **Users** work pane, in the **Login ID** column, click **admin**.
The **Local admin - user** dialog box opens.

Step 8   Click the task icon at the upper right of the dialog box and then choose **Create X509 Certificate** from the drop-down menu.

Step 9   In the **Create X509 Certificate** dialog box, complete the following steps:

    a) In the **Name** field, enter the name of the certificate.

    b) In the **Data** field, paste the certificate that you copied earlier.

    c) Click **Submit**.

Step 10   In VMware vCenter, in the **Login to another Fabric** dialog box, click **CHECK CONNECTION**.
You should see a message saying that the connection was successful.

Step 11   In the message box, in the **Passphrase** field, enter a passphrase to encrypt the private key, which is stored in VMware vCenter.

Step 12   Click **CONNECT TO APIC**.
The work pane displays information about the fabric.

Step 13   Verify that the fabric is registered in vCenter:

    a) In the fabric work pane, open the **ACI Tasks & Settings** pane by clicking the clipboard icon at the upper right.

    b) Look at the queue of tasks and settings for a **Register Fabric** entry showing the name of the new fabric as an object and the time that the fabric was registered.

What to do next

See the other sections in this guide for information about Cisco ACI HTML5 vCenter plug-in and tasks that you can perform with the plug-in.

Connect the Cisco ACI HTML5 vCenter Plug-in with Your Username and Password

This section describes how to connect the Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in to your Cisco ACI fabric using your Cisco Application Policy Infrastructure Controller (APIC) username and password.

Before you begin

You must have fulfilled the requirements in the section Prerequisites for Installing the Cisco ACI HTML5 vCenter Plug-in, on page 6.

Step 1 Log into the VMware vSphere Client.

Step 2 Click **Cisco ACI Fabric**, either in the left navigation pane or from the **Menu** pull-down menu.

Step 3 In the upper right of the fabric work pane, click + **FABRIC**.
The **Login to another Fabric** dialog box appears. It enables you to choose an authentication method and register your fabric with VMware vCenter.

Step 4 In the **Login to another Fabric** dialog box, complete the following steps:

a) In the **APIC IP / FQDN** area, in the **APIC IP / FQDN** field, enter your Cisco APIC IP address.

b) In the **Fabric Name** field, enter a name for the new fabric.

c) In the **CREDENTIALS** area, in the **User Name** field, enter your Cisco APIC username.

d) In the **Password** field, enter your Cisco APIC password.

e) Click **CONNECT TO APIC**.
The work pane displays information about the fabric.

Step 5 Verify that the fabric is registered in vCenter:

a) In the fabric work pane, open the **ACI Tasks & Settings** pane by clicking the clipboard icon at the upper right.

b) Look at the queue of tasks and settings for a **Register Fabric** entry showing the name of the new fabric as an object and the time that the fabric was registered.

You can also see the fabric from the **Fabric** drop-down list.

What to do next

See the other sections in this guide for information about Cisco ACI HTML5 vCenter plug-in and tasks that you can perform with the plug-in.

Connect the Cisco ACI HTML5 vCenter Plug-in Using a Previous Login

This section describes how to connect the Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in to your Cisco ACI fabric using previously used login credentials.

Note You cannot connect using this procedure when you use the Cisco ACI HTML5 vCenter plug-in for the first time. Even if you used a previous version of the plug-in on the same VMware vCenter, the cached settings are not available in the new version of the plug-in.

Before you begin

You must have fulfilled the requirements in the section Prerequisites for Installing the Cisco ACI HTML5 vCenter Plug-in, on page 6.

Step 1 Log into the VMware vSphere Client.

Step 2 Click **Cisco ACI Fabric**, either in the left navigation pane or from the **Menu** pull-down menu.

Step 3 In the upper right of the fabric work pane, click + **FABRIC**.

The **Login to another Fabric** dialog box appears. It enables you to choose an authentication method and register your fabric with VMware vCenter.

Step 4   In the **History** area, click a login that was used previously to connect to a fabric.

Step 5   In the **Connect to** dialog box, complete the following steps:

a)   In the **Fabric Name** field, enter the name of the fabric you previously connected to.

b)   In the **Password** field, enter the password that you previously used to connect to fabric.

   The user name and the Cisco Application Policy Infrastructure Controller (APIC) IP address used in the previous login are cached and added to the dialog box fields automatically.

c)   Click **CONNECT**.
   The work pane displays information about the fabric.

Step 6   Verify that the fabric is registered in vCenter:

a)   In the fabric work pane, open the **ACI Tasks & Settings** pane by clicking the clipboard icon at the upper right.

b)   Look at the queue of tasks and settings for a **Register Fabric** entry showing the name of the new fabric as an object and the time that the fabric was registered.

What to do next

See the other sections in this guide for information about Cisco ACI HTML5 vCenter plug-in and tasks that you can perform with the plug-in.

Uninstalling the Cisco ACI HTML5 vCenter Plug-in

You can uninstall the Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in by accessing a URL or by running a script.

Uninstall the Cisco ACI HTML5 vCenter Plug-in Using a Script

Complete this procedure to delete the Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in.

Step 1   Open a VMware PowerCLI console.

Step 2   Execute the `ACIPlugin-Uninstall.ps1`script.

   Example:

   ```
   .\ACIPlugin-Uninstall.ps1
   ```

Step 3   When prompted, provide the VMware vCenter IP address or fully qualified domain name (FQDN).

Step 4   In the pop-up window, provide your VMware vCenter credentials with administrator rights.
   The Cisco ACI HTML5 vCenter plug-in uninstalls.

Step 5   Log in into the VMware vSphere Client and make sure that the plug-in is no longer there.

   If you were already logged in to the VMware vSphere Client, log out and log in again.

Step 6   Restart your vsphere-ui service:

   For Linux server:

```
service-control --stop vsphere-ui
service-control --start vsphere-ui
```

For Windows server:

```
cd C:\Program Files\VMware\vCenter Server\bin
service-control --stop vsphere-ui
service-control --start vsphere-ui
```

Uninstall Cisco ACI HTML5 vCenter Plug-in Using a URL

Complete this procedure to delete the Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in.

Step 1   Enter the following URL in your browser:

```
https://vCenter_IP_address/mob/?moid=ExtensionManager&method=unregisterExtension
```

When prompted, log in with your VMware vCenter credentials.

Step 2   In the **Parameters** section, in the **Value** field, enter `com.cisco.aci.vcplugin`, and then click **Invoke Method**.

Step 3   Log into the VMware vSphere Client and ensure that the **Cisco ACI Fabric** is not present in the GUI.

> **Note**   If you were already logged into the VMware vSphere Client, you must log out and log back in to ensure that the **Cisco ACI Fabric** is not present.

Step 4   Restart your vsphere-ui service:

For Linux server:

```
service-control --stop vsphere-ui
service-control --start vsphere-ui
```

For Windows server:

```
cd C:\Program Files\VMware\vCenter Server\bin
service-control --stop vsphere-ui
service-control --start vsphere-ui
```

The Cisco ACI HTML5 vCenter Plug-in GUI

The Cisco ACI HTML5 vCenter GUI

The Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in provides a GUI in the VMware vSphere Client. The GUI enables you to configure and monitor Cisco ACI networking within VMware vCenter. This section provides a high-level overview of the GUI.

After you install the Cisco ACI HTML5 vCenter plug-in and log in to the VMware vCenter, you access the GUI by clicking **Cisco ACI Fabric** in the left navigation pane. Alternatively, you can choose **Cisco ACI Fabric** from the **Menu** drop-down list at the top of the page or by clicking **Shortcuts** in the left navigation pane and then clicking the **Cisco ACI Fabric** icon in the central work pane.

Clicking on the **Cisco ACI Fabric** takes you to the home page for working with the Cisco ACI fabric.

Figure 1: The Cisco ACI HTML5 vCenter plug-in home page
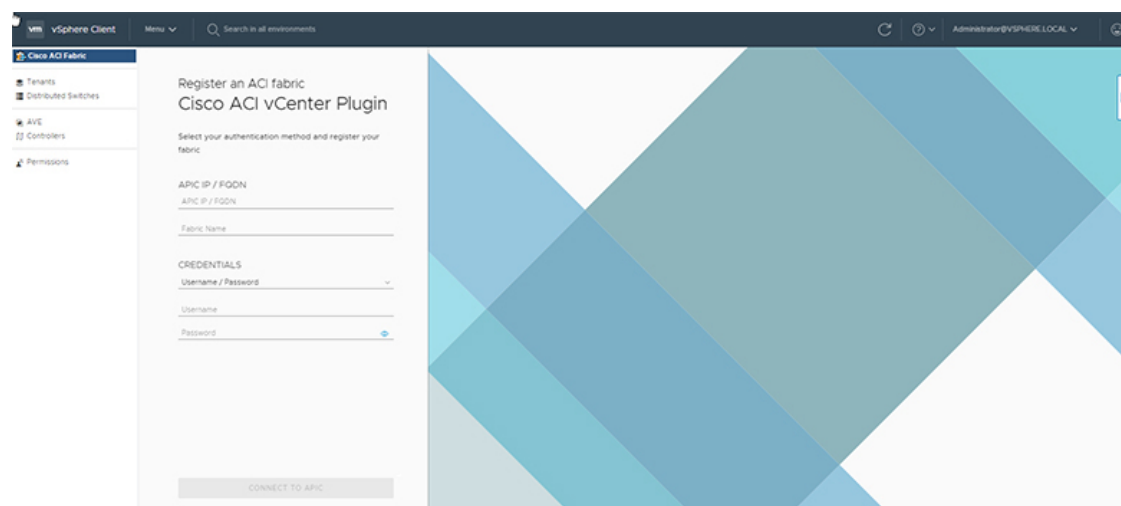
The preceding screen capture shows the **Cisco ACI Fabric** home page. The fields in the central work pane enable you to register a Cisco ACI with the Cisco ACI HTML5 vCenter plug-in. See Connecting the Cisco ACI HTML5 vCenter Plug-in to your Cisco ACI Fabric , on page 10. The links in the left navigation pane enable you to perform configuration and monitoring tasks.

After you connect the plug-in to your Cisco ACI fabric, the central work pane displays information about the fabric health, including the number of faults and their severity. The work pane also displays the number and health of the fabric application profiles, endpoint groups (EPGs), bridge domains, and VRFs, as well as the number of contracts and filters and the number and type of domains.

Tenants

The **Tenants** pane displays the tenants in the fabric chosen in the **Fabric** drop-down list. The table of tenants includes the name and description of each tenant as well as each tenant's health and faults.

From this page you create, edit, or delete a tenant by selecting the tenant (for editing or deleting a tenant) and then choosing the appriate task from the **ACTIONS** drop-down list at the upper right of the work pane. Double-click a tenant, and the **Summary** tab for the tenant displays information about the tenant's health, and the number and health the tenant application profiles, EPGs, bridge domains, and VRFs. The page also displays the number of contracts and filters and the number and type of domains.

The tenant **Application Management** tab is where you begin management of application profiles, EPGs, bridge domains, VRFs, contracts, and filters. From the object navigation area, choose the type of object that you want to create, edit or delete. Then, if appropriate, select the object in the table and choose the task that you want to perform from the **ACTIONS** drop-down list.

The **Event Analytics** tab displays a list of all the faults of the tenant, including faults of the objects under the tenant. The list also provides information about the fault's severity, code, description, affected object, and whether the fault is acked.

Distributed Switches

The **Distributed Switches** page displays the virtual machine manager (VMM) domains that are linked to the VMware vCenter for the fabric chosen from the **Fabric** drop-down list. The VMM domains table provides the name of the domain, its type (VSPHEREMANAGED, NATIVE, or AVE), and whether the domain uses VMware vSphere Proactive HA to improve availability.

Double-click a domain in the table to see more information about the domain. The **Summary** tab lists basic information about the domain and the number of hosts are attached to the domain. The **EPG** tab displays all the (EPGs) in the fabric linked to the domain. The **Summary** and **EPG** pages are read-only.

AVE

The **AVE** page displays all the Cisco ACI Virtual Edge VMM domains in the VMware vCenter that are linked to the fabric chosen from the **Fabric** drop-down list. The table of domains provides the name of the domain and whether it uses VMware vSphere Proactive HA to improve availability.

Double-click a domain in the table to see more information about the domain. The **Summary** tab lists basic information about the domain and the number of hosts that attached to the domain. The **AVE** tab lists all the hosts on which Cisco ACI Virtual Edge is installed as well as the name of the host and cluster, status, version, virtual machine, and management IP address information for the Cisco ACI Virtual Edge.

The page for the **AVE** tab is where you manage Cisco ACI Virtual Edge. In the table, check the check box next to a host and then click the appropriate button at the top of the table to deploy, upgrade, or remove Cisco ACI Virtual Edge from that host. See the *Cisco ACI Virtual Edge Installation Guide, Release 3.0(x)* on Cisco.com.

Controllers

The **Controllers** page displays the controllers in the fabric chosen from the **Fabric** drop-down list. For a Cisco Application Policy Infrastructure Controller (APIC) cluster, the page displays all the controllers if the logged-in user has administrative privileges.

The read-only page displays the controller name, IP address, version, health, reachability, administrative status, and operational status. See

Permissions

The **Permissions** page displays the permissions that the user logged in to VMware vCenter has for the Cisco ACI fabric. The permissions depend on the role-based access control (RBAC) set for the user to connect the Cisco ACI HTML5 vCenter plug-in to the Cisco ACI fabric.

The read-only page shows security domain and tenant permissions for the fabric chosen from the **Fabric** drop-down list.

CHAPTER 5

Configuring Cisco ACI in VMware vCenter

Configuring Cisco ACI with the Cisco ACI HTML5 vCenter Plug-in

The Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in enables you to perform basic Cisco ACI configuration tasks in VMware vCenter. This makes it easy for the virtualization manager create tenants, application profiles, and other key objects without having to use the Cisco Application Policy Infrastructure Controller (APIC).

Although the Cisco ACI HTML5 vCenter plug-in enables you to perform key configuration tasks, you need to use the Cisco APIC to perform more sophisticated configurations.

See the following documents on Cisco.com for instructions for configuring virtual switches that use the VMware vCenter:

• The chapter "Cisco ACI with VMware VDS Integration" in the *Cisco ACI Virtualization Guide*

• The *Cisco ACI Virtual Edge Configuration Guide*

• The Cisco APIC Basic Configuration Guide

Create a Tenant

This section describes how to create a tenant in VMware vCenter.

Note When you create a tenant using the Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in, the following objects are automatically created: an application profile, `tenant_name_default`; a Virtual Routing and Forwarding context (VRF), `tenant_name_default`; and a bridge domain, `tenant_name_default`.

Before you begin

Ensure that a Cisco ACI fabric is registered. For more information, see Connecting the Cisco ACI HTML5 vCenter Plug-in to your Cisco ACI Fabric , on page 10.

Step 1   Log into the VMware vSphere Client.

Step 2   Go to **Cisco ACI Fabric** > **Tenants**.

At the upper left of the **Tenants** work pane, make sure that the correct fabric is chosen from the **Fabric** drop-down menu.

Step 3   In the upper right of the work pane, click **ACTIONS** and then choose **Create Tenant**.

You can later return to the **ACTIONS** button to edit or delete a tenant.

Step 4   In the **Create New Tenant** dialog box, in the **Name** field, enter a name for the tenant.

Step 5   In the **Description** field, enter a description of the tenant.

Step 6   Click **OK**.
The **Tenants** work pane displays information about the newly created tenant.

What to do next

If you do not see the newly created tenant in the **Tenants** work pane, you can verify that the tenant was created:

- In the upper right of the **Tenants** work pane, click the clipboard icon.

- In the **ACI Tasks & Settings** pane, look for the **Create Tenant** entry for the tenant that you just created.

  You can also find the tenant by entering its name in the **Filter** field under **Actions**.

Create an Application Profile

This section describes how to create a new application profile for a tenant.

Before you begin

You must have configured a tenant. See Create a Tenant, on page 19.

Step 1   Log into the VMware vSphere Client.

Step 2   Go to **Cisco ACI Fabric** > **Tenants**, and in the work pane, click the tenant where you want to create an application profile.
The work pane displays the **Summary** page with information about the tenant, including the health and any configurations for the tenant.

Step 3   Click the **Application Management** tab.

Step 4   In the work pane, left of the table displaying the tenant, click **Application Profiles**, click the white **ACTIONS** button, and then choose **Create App. Profile**

You can later return to the **ACTIONS** button to edit or delete an application profile.

Step 5   In the **Create New Application Profile** dialog box, complete the following steps:

a)   In the **Name** field, enter a name for the application profile.

b)   In the **Description** field, enter text to describe the application profile.

c)   Click **OK**.

The **Application Profiles** work pane displays information about the newly created application profile.

What to do next

If you do not see the application profile in the **Application Profiles** work pane, you can verify that the application profile was created:

You can also find the application profile by entering its name in the **Filter** field under **Actions**.

- In the upper right of the **Tenants** work pane, click the clipboard icon.

- In the **ACI Tasks & Settings** pane, look for the **Create App** entry for the tenant that you just created.

Create a VRF

This section describes how to create a Virtual Routing and Forwarding context (VRF).

Before you begin

You must have created a tenant; see Create a Tenant, on page 19.

Step 1	Log into the VMware vSphere Client.
Step 2	Go to **Cisco ACI Fabric** > **Tenants**, and in the work pane, click the tenant where you want to create a VRF. The work pane displays the **Summary** page with information about the tenant, including the health and any configurations for the tenant.
Step 3	Click the **Application Management** tab.
Step 4	In the work pane, left of the table displaying the tenant, click **VRFs**, click the white **ACTIONS** button, and then choose **Create VRF**. You can return to the **ACTIONS** button to edit or delete a VRF.

Step 5	In the **Create New VRF** dialog box, complete the following steps:
	a) In the **Name** field, enter a name for the VRF.
	b) In the **Description** field, enter a description for the VRF.
	   The **Enforce Policies** check box is checked by default.
	c) Click **OK**.
	   the **VRFs** work pane displays information about the newly created VRF.

What to do next

If you do not see the VRF in the **VRFs** work pane, you can verify that the VRF was created:

- In the upper right of the **Tenants** work pane, click the clipboard icon.

- In the **ACI Tasks & Settings** pane, look for the **Create VRF** entry for the tenant that you just created.

   You can also find the VRF by entering its name in the **Filter** field under **Actions**.

Create a Bridge Domain

This section describes how to create a bridge domain.

Before you begin

You must have created a virtual routing and forwarding context (VRF); see Create a VRF, on page 21.

Step 1   Log into the VMware vSphere Client.

Step 2   Go to **Cisco ACI Fabric** > **Tenants**, and in the work pane, click the tenant where you want to create a bridge domain. The work pane displays the **Summary** page with information about the tenant, including the health and any configurations for the tenant.

Step 3   Click the **Application Management** tab.

Step 4   In the work pane, left of the table displaying the tenant, click **Bridge Domains**, click the white **ACTIONS** button, and then choose **Create Bridge Domain**.

You can return to the **ACTIONS** button to edit or delete a bridge domain.

Step 5   In the **Create New Bridge Domain** dialog box, complete the following steps:

a)   In the **Name** field, enter a name for the bridge domain.
b)   In the **Description** field, enter a description for the bridge domain.
c)   From the **VRF** drop-down list, choose a VRF.
d)   (Optional) In the **Private Subnets:** area, if you want to add a subnet, click **Add Gateway**, enter the address in the **Gateway** field, and then click the check mark.
e)   Click **OK**.
The **Bridge Domains** work pane displays information about the newly created bridge domain.

What to do next

If you do not see the newly created bridge domain in the **Bridge Domains** work pane, you can verify that the bridge domain was created:

- In the upper right of the **Tenant** work pane, click the clipboard icon.

- In the **ACI Tasks & Settings** pane, look for the **Create Bridge Domain** entry for the bridge domain that you just created.

  You can also find the bridge domain by entering its name in the **Filter** field under **ACTIONS**.

Create an EPG

This section describes how to create a new endpoint group (EPG) for a tenant. During the procedure you associate a virtual machine manager (VMM) domain with the EPG.

Before you begin

You must have created an application profile; see Create an Application Profile, on page 20.

Step 1 Log into the VMware vSphere Client.

Step 2 Go to **Cisco ACI Fabric** > **Tenants**, and in the work pane, click the tenant where you want to create an endpoint group. The work pane displays the **Summary** page with information about the tenant, including the health and any configurations for the tenant.

Step 3 Click the **Application Management** tab.

Step 4 In the work pane, left of the table displaying the tenant, click **EPGs**, click the white **ACTIONS** button, and then choose **Create EPG**.

You can later return to the **ACTIONS** button to edit or delete an EPG.

Step 5 In the **Create EPG** dialog box, complete the following steps:

a) In the **Name** field, enter a name for the EPG.

b) From the **Application Profile** drop-down list, choose the application profile.

c) In the **Description** field, enter text to describe the EPG.

d) In the **Domains** area, click **ACTIONS**, and then choose **Add Domain**.

e) In the **Add VMM Domain Association** dialog box, choose a domain from the **Domain** drop-down list.

f) (Optional) In the **Enhanced Lag Policy** area, choose a policy from the drop-down list.

For information about Enhanced LACP policy, see the chapter "Cisco ACI with VMware VDS Integration" in the *Cisco ACI Virtualization Guide* or the *Cisco ACI Virtual Edge Configuration Guide* on Cisco.com

g) Click **OK**.

Step 6 In the **Create EPG** dialog box, from the **Bridge Domains** drop-down list, choose a bridge domain.

Step 7 (Optional) Check the **Intra EPG Isolation** check box.

For information about intra-EPG isolation, see the chapter "Intra-EPG Isolation Enforcement and Cisco ACI" in the *Cisco ACI Virtualization Guide* or the chapter "Intra-EPG Isolation Configuration" in the *Cisco ACI Virtual Edge Configuration Guide* on Cisco.com

Step 8 Click **OK**.
The **EPGs** work pane displays information about the newly created EPG.

What to do next

If you do not see the newly created EPG in the **EPGs** work pane, you can verify that the EPG was created:

- In the upper right of the **Tenant** work pane, click the clipboard icon.

- In the **ACI Tasks & Settings** pane, look for the **Create EPG** entry for the EPG that you just created.

  You can also find the EPG by entering its name in the **Filter** field under **Actions**.

Create a Filter

This section describes how to create a filter.

Before you begin

You must have configured a tenant. See Create a Tenant, on page 19.

Step 1 Log into the VMware vSphere Client.

Step 2 Go to **Cisco ACI Fabric** > **Tenants**, and in the work pane, click the tenant where you want to create a filter.

The work pane displays the **Summary** page with information about the tenant, including the health and any configurations for the tenant.

Step 3 Click the **Application Management** tab.

Step 4 In the work pane, left of the table displaying the tenant, click **Filters**, click the white **ACTIONS** button, and then choose **Create Filter**

You can return to the **ACTIONS** button to edit or delete the filter.

Step 5 In the **Create New Filter** dialog box, complete the following steps:

a) In the **Name** field, enter a name for the filter.

b) In the **Description** field, enter a description for the filter.

c) In the **Entries:** area, right-click **ACTIONS** and from the drop-down list, choose **Create Entry**.

d) In the **Create New Entry** dialog box, enter a name for the entry in the **Name** field.

e) Complete one of the following series of steps:

   • If you want a simple entry, enter a name for the entry in the **Name** field, leave the **Advanced** check box unchecked, in the **Port:** area, choose a port from the selector or check the **Any** check box, and then click **OK**.

   • If you want an advanced entry, enter a name for the entry in the **Name** field, check the **Advanced** check box, choose a type from the **Ethernet** type drop-down list, choose a protocol from the **IP protocol** drop-down list, configure the **Source Port** and **Destination Port** fields, in the **TCP Rules** area, check the check box next to one of the rules, and then click **OK**.

f) In the **Create New Entry** dialog box, click **OK**.

The **Filters** work pane displays information about the newly created filter. Click the filter to display information about the filter's entries below the list of filters.

What to do next

If you do not see the filter in the **Filters** work pane, you can verify that the filter was created:

   • In the upper right of the **Tenants** work pane, click the clipboard icon.

   • In the **ACI Tasks & Settings** pane, look for the **Create Filter** entry for the tenant that you just created.

   You can also find the filter by entering its name in the **Filter** field under **Actions**.

Create a Contract

This section describes how to create a contract.

Step 1 Log into the VMware vSphere Client.

Step 2 Go to **Cisco ACI Fabric** > **Tenants**, and in the work pane, click the tenant where you want to create a contract.

Step 3 Click the **Application Management** tab.

Step 4   In the work pane, left of the table displaying the tenant, click **Contract**, click the white **ACTIONS** button, and then choose **Create Contract**.

You can later return to the **ACTIONS** button to edit or delete a contract.

Step 5   In the **Create New Contract** dialog box, complete the following steps:

a) In the **Consumers:** area, click the plus (+) icon.
b) In the **Select EPG** dialog box, in the **Available objects** column, check the check box for the EPG that you want to be the consumer of the contract, click **ADD**, and then click **OK**.
c) In the **Providers:** area, click the plus (+) icon.
d) In the **Select EPG** dialog box, in the **Available objects** column, check the check box for the EPG that you want to be the provider of the contract, click **ADD**, and then click **OK**.
e) In the **Create New Contract** dialog box, enter a name for the contract in the **Name** field.
f) (Optional) In the **Description** field, enter a description for the contract.
g) (Optional) In the **Traffic:** area, click the **Filters:** plus (+) icon.
h) (Optional) In the **Select Filters** dialog box, in the **Available objects** column, check the check box for the filter that you want to apply to the contract, click **ADD**, and then click **OK**.

The filters shown are those configured for the tenant and the common tenant.

i) (Optional) In the **Create New Contract**, check the **Bidirectional** check box if you want the contract to be bidirectional.
j) Click **OK**.
The **Contracts** work pane displays information about the newly created contract.

What to do next

If you do not see the contract in the Contracts work pane, verify that the contract was created:

- In the upper right of the **Tenant** work pane, click the clipboard icon.

- In the **ACI Tasks & Settings** pane, look for the **Create Contract** entry for the contract that you just created.

You can also find the contract by entering its name in the **Filter** field under **Actions**.

CHAPTER 6

Troubleshooting the Cisco ACI HTML5 vCenter Plug-in

Troubleshooting the Cisco ACI HTML5 vCenter Plug-in

If problems arise with the Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in, you can view status and faults for the fabric and for Cisco ACI objects. You also can collect the VMware vSphere Client logs for troubleshooting.

Collect VMware vSphere Client Logs

You can collect VMware vSphere Client logs to troubleshoot problems that might arise in using the Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in.

Step 1 Collect the logs, using one of the following paths, depending on your platform:
- Linux appliance: `/var/log/vmware/vsphere-ui/logs`
- Windows: `C:\ProgramData\VMware\vCenterServer\logs\vsphere-ui\logs`

The main VMware vSphere Client log file is `vsphere_client_virgo.log`.

Step 2 Look for the following information in the log file:
- `URL:=>`, `Response:=>`

  `URL:=>` is printed before the request to the Cisco Application Policy Infrastructure Controller (APIC), and `Response:=>` is printed after the response from the Cisco APIC. You can analyze the XML that was sent and received.

- `com.cisco.aci.vcplugin`

  If an error occurs during the Cisco ACI HTML5 vCenter plug-in installation, related error messages contain `com.cisco.aci.vcplugin` strings.

• `ERROR`: Error-level log messages.

Change the Log Level to Enable Debugging

By default, VMware vSphere Client logs are assigned `INFO`, `WARNING`, and `ERROR` levels. However, you can change the log level to enable debugging.

For detailed information, see *Enabling debug logging on the VMware vSphere 5.x/6.x Web Client service (2011485)* in the Knowledge Base section of the VMware website.

Step 1   Open `serviceability.xml`.

The following example is for a Linux appliance.

Example:

`/usr/lib/vmware-vsphere-ui/server/conf/serviceability.xml`

Step 2   Add the following near the end of the `serviceability.xml`, just before the `</configuration>` element:

```
<logger level="DEBUG" additivity="false" name="com.cisco.aci.vcplugin">
<appender-ref ref="SIFTED_LOG_FILE" />
<appender-ref ref="LOG_FILE" />
</logger>
```

Step 3   Restart the VMware vSphere Client.

For Linux server:

```
service-control --stop vsphere-ui
service-control --start vsphere-ui
```

For Windows server:

```
cd C:\Program Files\VMware\vCenter Server\bin
service-control --stop vsphere-ui
service-control --start vsphere-ui
```

Cisco ACI HTML5 vCenter Plug-in Missing from GUI

If you don't see the Cisco Application Centric Infrastructure (ACI) HTML5 vCenter plug-in in the VMware vCenter **Cisco ACI Fabric** GUI, complete the following steps:

Step 1   Make sure that you can download the `.zip` file from the VMware vCenter.

Step 2   Check the VMware vSphere Client logs.

See Collect VMware vSphere Client Logs, on page 27.

You can find relevant information by looking for the string `com.cisco.aci.vcplugin`.

Step 3   Check that the registration occurred by going to the following URL: `https://<VCENTER_IP>/mob/?moid=ExtensionManager&doPath=extensionList["com.cisco.aci.vcplugin"]`.

You should see the plug-in details on the page that opens. If the page is blank, registration did not occur.

What to do next

If the installation or upgrade failed, unregister the Cisco ACI HTML5 vCenter plug-in and restart the VMware vSphere Client before trying to install again. For information on how to restart the VMware vSphere Client, see .