Migration from Cisco AVS to Cisco ACI Virtual Edge

This chapter describes migration from Cisco AVS to Cisco ACI Virtual Edge, including different methods.

- About Migration from Cisco AVS to Cisco ACI Virtual Edge , on page 1
- Methods of Migrating from Cisco AVS to Cisco ACI Virtual Edge , on page 1
- Prerequisites for Migrating from Cisco AVS to Cisco ACI Virtual Edge , on page 4
- Migrate from Cisco AVS to Cisco ACI Virtual Edge Using the Cisco ACI vCenter Plug-in, on page 6

About Migration from Cisco AVS to Cisco ACI Virtual Edge

If you use Cisco AVS, you can migrate hosts and their VMs from that switch to Cisco ACI Virtual Edge.

After fulfilling several prerequisites, you use vCenter plug-in to use one of three methods to migrate from Cisco AVS to Cisco ACI Virtual Edge.

Methods of Migrating from Cisco AVS to Cisco ACI Virtual Edge

You can use one of three methods in the vCenter plug-in to migrate from Cisco AVS to Cisco ACI Virtual Edge. Each method automates the migration through the same vCenter GUI screens. The method you choose depends on your setup and network topology:

- **DRS**—All the hosts to be migrated are in the same Distributed Resource Scheduler (DRS) cluster. When the vCenter plug-in puts a host into maintenance mode, DRS automatically migrates the host's VMs to another host in the cluster.

  With this method, any active VMs present on the host are automatically moved out of the host, resulting in minimal traffic loss.

- **Reserve Host**—You choose a reserve host, and the vCenter plug-in migrates all active VMs to this host before proceeding with the migration.

  With this method, any active VMs present on the host are automatically moved out of the host, resulting in minimal traffic loss.

- **In-Place Migration**—The host is migrated to Cisco ACI Virtual Edge with active VMs running on the host. You may want to use this method if don't want to move VMs to another host and want only to deploy Cisco ACI Virtual Edge.

Note This method causes significant outage to the VMs' network connectivity.

DRS Migration Workflow

The following is for migrating when there are no hosts in the cluster with Cisco ACI Virtual Edge running with OpFlex online.

1. The host is put into maintenance mode.
2. The Cisco ACI Virtual Edge DVS is added to the host.

   Make sure that the Cisco ACI Virtual Edge DVS has inside/outside and intra port groups and the same port groups that are on the Cisco AVS.
3. The PNICs and vmknic are moved from the Cisco AVS DVS to the Cisco ACI Virtual Edge DVS.
4. The port group of powered-off VMs on the host is updated from Cisco AVS to Cisco ACI Virtual Edge.
5. The Cisco AVS DVS is removed from the host.
6. The Cisco AVS module is uninstalled from the host (if you chose to uninstall it).
7. An affinity rule is placed on the DRS cluster.

   The affinity rule prevents DRS from moving any VMs running on the Cisco ACI Virtual Edge DVS to the host being upgraded until the Cisco ACI Virtual Edge VM is fully deployed.
8. The host is taken out of maintenance mode.
9. The Cisco ACI Virtual Edge VM is deployed on the host.
10. The OpFlex agent comes online.
11. The affinity rule on the DRS cluster is removed.

    The host has now finished migrating from Cisco AVS to Cisco ACI Virtual Edge.

When you migrate another host in the cluster, the DRS cluster checks if any hosts in the cluster are running Cisco ACI Virtual Edge. When it finds one, it moves VMs from the second host to the host running Cisco ACI Virtual Edge through a cross-DVS VMotion. VMs are left on their original host if the new host does not have sufficient resources. When multiple hosts run Cisco ACI Virtual Edge, the DRS cluster balances the load among them during migration.

Reserve Host Migration Workflow

If the reserve host is running Cisco AVS, then the active VMs are moved to the reserve host using standard VMotion. If the reserve host is running Cisco ACI Virtual Edge, the active VMs are moved to the reserve host using cross-DVS VMotion.

Note If you are using the reserve host migration method, and the reserve host is running Cisco ACI Virtual Edge, all hosts must run ESXi version 6.0. Otherwise, cross-DVS VMotion does not work.

1. The host is put into maintenance mode.
2. The Cisco ACI Virtual Edge DVS is added to the host.
3. The PNICs and vmknic are moved from the Cisco AVS DVS to the Cisco ACI Virtual Edge DVS.
4. The port group of powered-off VMs on the host is updated from Cisco AVS to Cisco ACI Virtual Edge.
5. The Cisco AVS DVS is removed from the host.
6. The Cisco AVS module is uninstalled from the host.
7. An affinity rule is placed on the DRS cluster. This prevents any VMs running on the Cisco ACI Virtual Edge DVS to move to the host being upgraded.
8. The host is taken out of maintenance mode.
9. The Cisco ACI Virtual Edge VM is deployed on the host.
10. The OpFlex Agent comes online.
11. The VMs that were automatically moved by VMotion to the reserve host in Step 1 are moved by VMotion back to the host that you just migrated to Cisco ACI Virtual Edge.

    If VMs were moved to the reserve host using standard VMotion, then cross-DVS VMotion is used to move them back. If VMs were moved to the reserve host using cross-DVS VMotion, then standard VMotion is used to move them back.

In-Place Migration Workflow

1. The Cisco ACI Virtual Edge DVS is added to the host.
2. The Cisco ACI Virtual Edge VM is deployed on the host.

   No uplinks are connected, and OpFlex is down.
3. The PNICs and vmknic are moved from the Cisco AVS DVS to the Cisco ACI Virtual Edge DVS.

   The VMs running on Cisco AVS lose network connectivity at this point.
4. The OpFlex Agent comes online.
5. The VM port groups are updated from Cisco AVS to Cisco ACI Virtual Edge.
6. The Cisco AVS DVS is removed from the host.

Note The Cisco ACI Virtual Edge module remains installed on the host using this method; uninstalling it requires putting the host into maintenance mode.

Prerequisites for Migrating from Cisco AVS to Cisco ACI Virtual Edge

Before you can migrate hosts and VMs from Cisco Application Virtual Switch (AVS) to Cisco Application Centric Infrastructure (ACI) Virtual Edge, perform the following tasks:

- Create a VMM domain for Cisco ACI Virtual Edge in Cisco APIC.

  The associated DVS with all port groups already must be created in vCenter.

- Disable ARP Learning on the Cisco AVS VMM domain before beginning the migration.

  Cisco ACI Virtual EdgeVMM domain creation will fail if ARP Learning is enabled on the Cisco AVS VMM domain.

- Make sure that OpFlex is online so the hosts can migrate.

- Upload the Cisco ACI Virtual Edge OVF file to the vCenter content library.

  See the procedure Uploading the Cisco ACI Virtual Edge VM OVF File to the VMware vCenter Content Library in this guide for instructions.

- Make sure that all VMs on the hosts that you plan to upgrade are using shared storage.

- Make sure that any EPGs used by vmknics use native mode switching.

  Note Unless they are backed by EPGs, vmknics will not be migrated.

- In order to use the Cisco ACI Virtual Edge management tools (including the ACI vCenter plug-in), we recommend that you use vCenter 6.0 Update 3 or later.

- Make sure that all hosts run ESXi 6.0 or later. Cross-DVS VMotion fails unless all hosts being migrated—and the reserve host when using reserve-host migration—run earlier versions of ESXi.

- Make sure that the Enhanced VMotion Compatibility (EVC) mode for the DRS cluster is set to Nehalem or higher.

- Plan VMotion migration to not exceed the limit on Cisco ACI Virtual Edge installed hosts; the limit is 300 VMs per ESXi host.

- If Cisco ACI Virtual Edge will be deployed in mixed-mode or VLAN mode, create two VLAN pools: one for primary encapsulation and one for private VLAN implementation.

  The role for the private VLAN pool must be internal. If Cisco ACI Virtual Edge will be deployed in VXLAN mode, only a private VLAN pool is necessary.

  Note Alternatively, if you migrate from Cisco AVS to Cisco ACI Virtual Edge using the Cisco APIC GUI, you can create the private VLAN pools during migration.

Migrate the Cisco AVS VMM Domain to Cisco ACI Virtual Edge Using the GUI

You can use the Cisco APIC GUI to migrate an existing Cisco AVS VMM domain to a new Cisco ACI Virtual Edge domain. This method is easier than creating a new VMM domain, which requires that you manually reproduce most of the configuration of the Cisco AVS domain.

All the properties of the original domain remain; however, you must re-enter your vCenter credentials. The original VMM domain remains.

Note You can migrate only one Cisco AVS VMM domain at a time.

Note All EPGs associated to the original VMM domain are copied to the new Cisco ACI Virtual Edge VMM domain with Cisco ACI Virtual Edge switching mode.

Before you begin

Create a Cisco AVS domain. See the procedure Create vCenter Domain, Interface, and Switch Profiles Using the GUI in this guide.

Procedure

Step 1 Log in to the Cisco APIC.

Step 2 Go to **Virtual Networking** > **Inventory**.

Step 3 In **Inventory** navigation pane, expand the **VMM Domains** and the **VMware** folders, right-click the Cisco AVS domain that you want to migrate, and then choose **Migrate to Cisco AVE**.

Step 4 In the **Migrate To Cisco AVE** dialog box, complete the following actions:

a) In the **Virtual Switch Name** field, enter a name for the new Cisco ACI Virtual Edge VMM domain.

b) From the **VLAN Pool** drop-down list, choose or create a VLAN pool.

If Cisco ACI Virtual Edge will be deployed in mixed mode or VLAN mode, create two VLAN pools: one for primary encapsulation and one for private VLAN implementation. The role for the private VLAN pool must be internal. If Cisco ACI Virtual Edge will be deployed in VXLAN mode, only a private VLAN pool is necessary.

c) In the **vCenter Credentials** area, double-click **Re-enter required** and enter and confirm your vCenter password.

d) Click **Update** and then click **OK**.

What to do next

Follow instructions in the section Migrate from Cisco AVS to Cisco ACI Virtual Edge Using the Cisco ACI vCenter Plug-in, on page 6 in this guide.

Migrate from Cisco AVS to Cisco ACI Virtual Edge Using the Cisco ACI vCenter Plug-in

You use the Cisco ACI vCenter plug-in to migrate hosts and their VMs from Cisco AVS to Cisco ACI Virtual Edge, choosing one of three migration methods. The procedure is virtually the same for each method.

Before you begin

You must have fulfilled the tasks in the section Prerequisites for Migrating from Cisco AVS to Cisco ACI Virtual Edge , on page 4 in this guide. You also must have migrated the VMM domain; see the section Migrate the Cisco AVS VMM Domain to Cisco ACI Virtual Edge Using REST API or the section Migrate the Cisco AVS VMM Domain to Cisco ACI Virtual Edge Using the GUI, on page 5 in this guide.

Procedure

Step 1 Log in to the vSphere Web Client.

Step 2 In the **Home** work pane, click the **Cisco ACI Fabric** icon.

Step 3 In the **Cisco ACI Fabric** navigation pane, click **Infrastructure**.

Step 4 Click the **AVS** tab at the top of the page.

Step 5 Click the **Refresh ACI Domains** button.

Step 6 In the **Cisco AVS** work pane, from the **Select an AVS Domain** drop-down list, choose a kernel Cisco AVS domain.

Step 7 On the right side of the **Cisco AVS** work pane, check the appropriate check box to choose each host that you want to migrate.

Step 8 Click **Migrate to ACI Virtual Edge.**.
The **AVS Migration** dialog box appears.

Step 9 From the **Mode** drop-down list, choose a migration method.

You can choose **DRS**, **Reserve Host**, or **In-Place**. See the section Methods of Migrating from Cisco AVS to Cisco ACI Virtual Edge , on page 1 in this guide for details.

You can choose to retain the Cisco AVS kernel module by checking the retention check box.

Step 10 If you chose **Reserve Host** in the previous step, choose the host from the **Reserve Host** drop-down list that appears.

Step 11 From the **Target VDS** area, choose the Cisco ACI Virtual Edge domain that you want to migrate the host or hosts to.

If you have more than one Cisco ACI Virtual Edge domain, you choose the domain from a drop-down list.

Step 12 From the **ACI Virtual Edge** drop-down list, choose the Cisco ACI Virtual Edge installation configuration.

Step 13 From the **Management** drop-down list, choose the management port group for the management interface of the Cisco ACI Virtual Edge VM.

Step 14 From the **Datastore** drop-down list, choose **Custom**, click **Edit**.

Step 15 In the **Custom AVE Datastore selection** dialog box, choose a local or a remote data store for each Cisco ACI Virtual Edge.

Note To ensure a higher level of availability, we recommend that you choose a local data store if you have one.

Note You may not see all types of local storage in vCenter. However, if you uncheck the **Use local datastore only** check box, vCenter shows all local data stores. For details, see the document "When installing ESX/ESXi 4.x or 5.x to a physical server, the local SAS drive appears as a remote storage (1027819)" on the VMware website for details.

Step 16 In the **VM Password** fields, enter the admin password for the Cisco ACI Virtual Edge VM.

Step 17 Make sure that in the **Migration Validity** area, you see the message "The configuration is valid," and then click **OK**.

If the configuration is not valid, you see an error message indicating which preflight check failed and giving the reason that the migration cannot proceed. Fix the issue that caused the validation and try the migration again.