



Upgrading the Cisco Nexus 1000V

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Information About the Software Upgrade

Mixed Mode Upgrade Support

Starting with Cisco Nexus 1000V, Release 5.2(1)SV3(1.15), Cisco Nexus 1000V deployment supports configuration where the VSM version can be same or higher than the VEM version. With the mixed mode upgrade functionality, you can now upgrade the VSM without upgrading the VEM and reduce the overall overheads involved in Cisco Nexus 1000V upgrade. For example, you can upgrade only the VSM to release 5.2(1)SV3(1.15) from a previous release and skip the VEM upgrade. The following table lists the releases that support mixed mode upgrade.

Table 1: Mixed Mode Support Matrix

Software	Release Number
VMware ESX	5.5, 6.0, and 6.5a
Cisco Nexus 1000V	5.2(1)SV3(1.4) and later

Upgrade Software Sources



Note An [interactive upgrade tool](#) has been provided to assist you in determining the correct upgrade steps based on your current environment and the one to which you want to upgrade.

You can obtain your upgrade-related software from the following sources listed in this table:

Table 2: Obtaining the Upgrade Software

Source	Description
Cisco	Download the current release of the Cisco Nexus 1000V software from http://www.cisco.com/en/US/products/ps9902/index.html .
VMware	<p>Download the VMware software from the VMware website.</p> <p>The current Cisco Nexus 1000V software release image for VMware Release 5.1 is at the VMware web site:</p> <ul style="list-style-type: none"> • Online portal for VMware Update Manager (VUM): http://www.vmware.com/vum/REDUCED_LICENSES/subscribe.html • Offline patch portal: http://www.vmware.com/patchmgr/download.portal

For information about your software and platform compatibility, see the *Cisco Nexus 1000V and VMware Compatibility Information* document.

Information about NetFlow Upgrade

With Distributed NetFlow, the switch sends NetFlow export packets directly from the VEMs to the collectors.

During the upgrade process, the switch migrates from the old centralized model to the new distributed model. As part of this migration, unsupported commands are removed and/or converted as part of the VSM upgrade. The new and changed commands are available as soon as all of the VEMs are upgraded and the feature level is updated. Additionally, the following new requirements are imposed on the network reachability:

- The collectors must be Layer 3 reachable from at least one vmknfc on each VEM host.
- Strict Reverse Path Forwarding (RPF) might need to be disabled on the routers between the VEM hosts and the collectors.

These are the removed, converted, and new commands:

Command	Change
cache size	Removed. The cache size is no longer user configurable.
timeout active timeout inactive	Converted. The configured timeout active and timeout inactive values are consolidated and converted to be the flow timeout active and flow timeout inactive values. The new consolidated timeouts are set to the maximum of the old individual timeouts. Note After conversion, subsequent changes to the timeouts do not apply to the existing interface configurations on non-upgraded VEMs.
source mgmt	Converted. The configured source mgmt values are converted to be the source lc-exp values. The NetFlow export packets are no longer sent from the VSM's mgmt0 interface.
netflow layer2-switched input	New. The netflow layer2-switched input command configures the Layer 2 default record.
match datalink	New. The match datalink command configures the Layer 2 record fields.

Prerequisites for the Upgrade

Before You Begin

Review the following information before you begin an upgrade:

- Virtual machine hardware version 11 is not supported.
- The Virtual Service Domain (VSD) feature is no longer supported and must be removed before upgrading to Release 5.2(1)SV3(1.4).
- The Upgrade Application cannot be used for the direct upgrade of the Virtual Supervisor Module(VSMs) from Releases 4.2(1)SV1(4), 4.2(1)SV1(5.1), 4.2(1)SV1(5.2), 5.2(1)SV3(1.2), and 5.2(1)SV3(1.3) to the current release.
- A pair of VSMs in a high availability (HA) pair is required in order to support a nondisruptive upgrade.
- A system with a single VSM can only be upgraded in a disruptive manner.

- The network and server administrators must coordinate the upgrade procedure with each other.
- The upgrade process is irrevocable. After the software is upgraded, you can downgrade by removing the current installation and reinstalling the software. For more information, see the “Recreating the Installation” section of the *Cisco Nexus 1000V Troubleshooting Guide*.
- A combined upgrade of ESX and the Virtual Ethernet Module (VEM) in a single maintenance mode is supported in this release. A combined upgrade requires at least vCenter 5.0 Update 1 whether you upgrade manually or are using the VMware Update Manager.
- You can manually upgrade the ESX and VEM in one maintenance mode as follows:
 1. Place the host in maintenance mode.
 2. Upgrade ESX to 5.0 or 5.1 as needed.
 3. Install the VEM vSphere Installation Bundle (VIB) while the host is still in maintenance mode.
 4. Remove the host from maintenance mode.
- The steps for the manual combined upgrade procedure do not apply for VMware Update Manager (VUM)-based upgrades.
- You can abort the upgrade procedure by pressing **Ctrl-C**.

Prerequisites for Upgrading VSMs

Upgrading VSMs has the following prerequisites:

- Before upgrading the VSM, ensure that the ESXi hosts is upgraded to release 5.5 or later.
- Close any active configuration sessions before upgrading the Cisco Nexus 1000V software.
- Save all changes in the running configuration to the startup configuration.
- Save a backup copy of the running configuration in external storage.
- Perform a VSM backup. For more information, see the “Configuring VSM Backup and Recovery” chapter in the *Cisco Nexus 1000V System Management Configuration Guide*.
- Use the VSM management IP address to log into VSM and perform management tasks.



Important

If you connect to a VSM using the VSA serial port or the connect host from the Cisco Integrated Management Control (CIMC), do not initiate commands that are CPU intensive, such as copying image from the TFTP server to bootflash or generating a lot of screen output or updates. Use the VSA serial connections, including CIMC, only for operations such as debugging or basic configuration of the VSA.

Prerequisite to Upgrading a VSM to a 3-GB Hard Disk Drive

Cisco Nexus 1000V for VMware Release 5.2(1)SV3(1.x) and higher requires a minimum of 3-GB of hard disk drive (HDD) space. If you are upgrading from a previous release to Release 5.2(1)SV3(1.x) and you have a 2-GB HDD, you must upgrade to a 3-GB HDD.

Upgrading Hard Disk Drive Space from 2 GB to 3 GB on a VSM as a VM

We recommend that you upgrade the HDD space from 2 GB to 3 GB on a VSM VM before upgrading VSM to Release 5.2(1)SV3(1.1) or later.

Before you begin

Make sure that the Cisco Nexus 1000V VSMs are running Release 4.2(1)SV2(1.1) or 4.2(1)SV2(2.1).

Make sure that the existing Cisco Nexus 1000V VSMs are an HA pair with 2 GB HDD.

Procedure

-
- Step 1** Remove the existing standby VSM.
- Right-click the VSM VM and power off the VM.
 - Remove it from the Virtual Center inventory.
- Step 2** Bring up the new standby VSM VM (with 3-GB HDD) with the same release as the active VSM using ISO.
- For example, if the active VSM is running Release 4.2(1)SV2(1.1), bring up the new standby VSM with Release 4.2(1)SV2(1.1).
- Confirm that the same port profiles are used as the primary VSM for 3 network interfaces.
 - Provision a 3-GB HDD with a minimum of 2 GB of RAM reserved and allocated, and a minimum CPU speed of 1600 MHz.
- For more information, see the *Cisco Nexus 1000V Installation and Upgrade Guide* available at [Cisco Nexus 1000V Installation and Upgrade Guide](#) for more information.
- Step 3** Power on the standby VSM.
- Confirm the HA role is set as Secondary.
 - Confirm the Domain ID is the same as the Primary VSM.
- Step 4** After the HA pair is formed, perform a system switchover to make the standby VSM become the active VSM.
- Step 5** Remove the current standby VSM.
- Right-click the VSM VM and power off the VM.
 - Remove it from the Virtual Center inventory.
- Step 6** Change the Active VSM system redundancy role to the Primary system by entering **system redundancy role primary**.
- Step 7** Copy the config to start up and perform a reload.
- Step 8** Verify the current role by entering **show system redundancy status**. The role should be set as Primary.
- Step 9** Bring up the new standby VSM VM (with 3-GB HDD) using ISO following Step 2 and Step 3.

- Step 10** After the HA pair is formed, verify it by entering **show system internal flash**. It should reflect the VSM with 3-GB HDD.

What to do next

Perform an in-service software upgrade (ISSU) to Release 5.2(1)SV3(1.1) or later.

Upgrading Hard Disk Drive Space from 2 GB to 3 GB on a VSM on a VSB

We recommend that you upgrade the VSM that is deployed on a CSP from a 2-GB HDD to a 3-GB HDD.

Procedure

- Step 1** Identify the standby VSM by entering the **show virtual-service-blade summary** command.

```
N1110# show virtual-service-blade summary
```

Name	HA-Role	HA-Status	Status	Location
switch	PRIMARY	ACTIVE	VSB POWERED ON	PRIMARY
switch	SECONDARY	STANDBY	VSB POWERED ON	SECONDARY

```
N1110#
```

The output shows that the standby VSM is running on the secondary Cisco Nexus 1010 Virtual Service Blade (VSB).

- Step 2** Shut down and delete the standby VSM on the secondary VSB.

- N1110# **configure terminal**
- N1110#(config)**virtual-service-blade** name switch
- N1110#(config-vsbs-config)**shutdown secondary**
- N1110#(config-vsbs-config)**no enable secondary**

- Step 3** Bring up the new secondary VSB with Release 4.2(1)SV2(1.1) using ISO.

See the [Cisco Nexus 1100 Series Virtual Services Appliances Deployment Guide White Paper](#) for more information.

- Step 4** Change the disk size to 3 GB or more.

```
N1110 (config-vsbs-config)# disksize 4
```

- Step 5** Enable the standby VSM on the secondary VSB.

See the [Cisco Nexus 1100 Series Virtual Services Appliances Deployment Guide White Paper](#) for more information.

```
N1110# sh virtual-service-blade summary
```

Name	HA-Role	HA-Status	Status	Location
switch	PRIMARY	ACTIVE	VSB POWERED ON	PRIMARY
switch	SECONDARY	NONE	VSB NOT PRESENT	SECONDARY
switch1	PRIMARY	NONE	VSB NOT PRESENT	PRIMARY
switch1	SECONDARY	STANDBY	VSB POWERED ON	SECONDARY

```
N1110#
```

- Step 6** Perform a system switchover to make the active VSM on the primary VSB become the standby VSM. To do this, enter the **system switchover** command on the active VSM.

```
N1110# system switchover
N1110(config-vsb-config)# show virtual-service-blade summary
```

```
-----
Name                HA-Role    HA-Status  Status                Location
-----
switch              PRIMARY    STANDBY    VSB POWERED ON       PRIMARY
switch              SECONDARY  NONE       VSB NOT PRESENT      SECONDARY
switch1             PRIMARY    NONE       VSB NOT PRESENT      PRIMARY
switch1             SECONDARY  ACTIVE     VSB POWERED ON       SECONDARY
```

```
N1110(config-vsb-config)#
```

- Step 7** After the HA pair is formed, shut down and delete the standby VSM on the primary VSB.

```
N1110(config)# virtual-service-blade switch
N1110(config-vsb-config)# shutdown primary
N1110(config-vsb-config)# no enable primary

N1110(config-vsb-config)# show virtual-service-blade summary
```

```
-----
Name                HA-Role    HA-Status  Status                Location
-----
switch              PRIMARY    NONE       VSB NOT PRESENT      PRIMARY
switch              SECONDARY  NONE       VSB NOT PRESENT      SECONDARY
switch1             PRIMARY    NONE       VSB NOT PRESENT      PRIMARY
switch1             SECONDARY  ACTIVE     VSB POWERED ON       SECONDARY
```

```
N1110(config-vsb-config)#
```

- Step 8** Bring up the new VSB with Release 4.2(2)SV2(1.1) using ISO.
See the [Cisco Nexus 1100 Series Virtual Services Appliances Deployment Guide White Paper](#) for more information.

- Step 9** Enable the primary VSM.
See the [Cisco Nexus 1100 Series Virtual Services Appliances Deployment Guide White Paper](#) for more information.

```
N1110(config)# show virtual-service-blade summary
```

```
-----
Name                HA-Role    HA-Status  Status                Location
-----
switch              PRIMARY    NONE       VSB NOT PRESENT      PRIMARY
switch              SECONDARY  NONE       VSB NOT PRESENT      SECONDARY
switch1             PRIMARY    STANDBY    VSB POWERED ON       PRIMARY
switch1             SECONDARY  ACTIVE     VSB POWERED ON       SECONDARY
```

```
N1110(config-vsb-config)#
```

- Step 10** Verify that the HDD size has changed. The following example shows that the HDD size is 4 GB.

```
N1110(config)# show system internal flash
```

```
Mount-on          lK-blocks    Used    Available    Use%    Filesystem
-----
/                  /              307200  87628        219572  29    /dev/root
```

```

      /proc                0          0          0          0  proc
      /isan               614400    243076    371324    40  none
      /var/sysmgr         512000    18896    493104    4  none
      /var/sysmgr/ftp     204800    40        204760    1  none
      /dev/shm            358400    30268    328132    9  none
      /volatile           20480     0        20480     0  none
      /debug              2048      8        2040     1  none
      /dev/mqueue         0          0          0          0  none
      /mnt/cfg/0          326681    8360     301455    3  /dev/hda5
      /mnt/cfg/1          326681    8359     301456    3  /dev/hda6
      /var/sysmgr/startup-cfg 409600    1168    408432    1  none
      /dev/pts            0          0          0          0  devpts
      /mnt/pss            326671    8625     301178    3  /dev/hda3
      /bootflash          3122988   151756   2812592    6  /dev/hda4
      /bootflash_sup-remote 3122992   151760   2812592    6
127.1.1.1:/mnt/bootflash/

```

What to do next

Perform an in-service software upgrade (ISSU) to Release 5.2(1)SV3(1.1) or later.

Verifying that the VSM Has 3 GB of Hard Disk Drive Storage

You can display the system internal flash to verify that have at least 3 GB of HDD space.

Procedure

Step 1 Display the system internal flash.

```

switch# show system internal flash
Mount-on      1K-blocks      Used      Available      Use%      Filesystem
/              307200         77808     229392         26        /dev/root
/mnt/pss       248895         8164      227879         4         /dev/sda3
/proc         0              0          0              0         proc
/isan         614400        372236     242164         61        none
/var/sysmgr   1048576       488704     559872         47        none
/var/sysmgr/ftp 204800        52        204748         1         none
/nxos/tmp     20480         0          20480          0         none
/dev/shm      358400        89660     268740         26        none
/volatile     20480         0          20480          0         none
/debug        2048          128       1920           7         none
/dev/mqueue   0              0          0              0         none
/mnt/cfg/0    248895        4494      231551         2         /dev/sda5
/mnt/cfg/1    241116        4493      224175         2         /dev/sda6
/var/sysmgr/startup-cfg 409600       5892     403708         2         none
/dev/pts      0              0          0              0         devpts
/mnt/pss      248895        8164      227879         4         /dev/sda3
/bootflash    2332296       1918624   295196         87        /dev/sda4
/sys          0              0          0              0         sysfs

```

Note 1 GB of hard disk space is equal to 1073741.824 1K-blocks.

- Step 2** Make sure that the sum total of the number of blocks allocated to the /mnt/cfg/0, /mnt/cfg/1, /mnt/pss, and /bootflash partitions is approximately 3 GB.
-

Guidelines and Limitations for Upgrading the Cisco Nexus 1000V

Before attempting to migrate to any software image version, follow these guidelines:



Caution During the upgrade process, the Cisco Nexus 1000V does not support any new additions such as modules, virtual NICs (vNICs), or VM NICs and does not support any configuration changes. VM NIC and vNIC port-profile changes might render VM NICs and vNICs in an unusable state.



Note The minimum vSphere version required is 5.5.

- You are upgrading the Cisco Nexus 1000V software to the current release.
- Scheduling—Schedule the upgrade when your network is stable and steady. Ensure that everyone who has access to the switch or the network is not configuring the switch or the network during this time. You cannot configure a switch during an upgrade.
- Hardware—Avoid power interruptions to the hosts that run the VSM VMs during any installation procedure.
- Connectivity to remote servers — do the following:
 - Copy the kickstart and system images from the remote server to the Cisco Nexus 1000V.
 - Ensure that the switch has a route to the remote server. The switch and the remote server must be in the same subnetwork if you do not have a router to route traffic between subnets.
- Software images— Do the following:
 - Make sure that the system and kickstart images are the same version.
 - Retrieve the images in one of two ways:
 - Locally—Images are locally available on the upgrade CD-ROM/ISO image.
 - Remotely—Images are in a remote location and you specify the destination using the remote server parameters and the filename to be used locally.
- Commands to use—Do the following:
 - Verify connectivity to the remote server by using the **ping** command.
 - If you are using Layer 3 mode for VSM-to-VEM connectivity, verify the IP address on the Layer 3 control interface using the **show interface {control0 | mgmt0}** command. If the IP address is missing, re-apply the IP address configuration on the corresponding Layer 3 control interface.
 - Use the **install all** command to upgrade your software. This command upgrades the VSMs.

- Do not enter another **install all** command while running the installation. You can run commands other than configuration commands.
- During the VSM upgrade, if you try to add a new VEM or any of the VEMs are detached due to uplink flaps, the VEM attachment is queued until the upgrade completes.
- If VEMs get removed after the VSM upgrade, use the **system switchover** command to perform a system switchover after the HA pair is established.



Note If the ESX hosts are not compatible with the software image that you install on the VSM, a traffic disruption occurs in those modules, depending on your configuration. The **install all** command output identifies these scenarios. The hosts must be at the right version before the upgrade.

Before upgrading the VEMs, note these guidelines and limitations.



Note It is your responsibility to monitor and install all the relevant patches on VMware ESX hosts.

- The VEM software can be upgraded manually using the CLI or upgraded automatically using VUM.
- During the VEM upgrade process, VEMs reattach to the VSM.
- Connectivity to the VSM can be lost during a VEM upgrade when the interfaces of a VSM VM connect to its own Distributed Virtual Switch (DVS).
- If you are upgrading a VEM using a Cisco Nexus 1000V bundle, follow the instructions in your VMware documentation. For more details about VMware bundled software, see the *Cisco Nexus 1000V and VMware Compatibility Information* document.



Caution Do not enter the **vemlog**, **vemcmd**, or **vempkt** commands during the VEM upgrade process because these commands impact the upgrade.



Note For ESXi 5.1 update 2 and later, the minimum versions are as follows:

- VMware vCenter Server 5.1, 799731
- VMware Update Manager 5.1, 782803

For ESXi 5.5 update 1 and later, the minimum versions are as follows:

- VMware vCenter Server 5.0.0, 455964
- VMware Update Manager 5.0.0 432001

If you plan to do a combined upgrade of ESX and VEM, the minimum vCenter Server/VUM version required is 623373/639867.

This procedure is different from the upgrade to Release 4.2(1)SV1(4). In this procedure, you upgrade the VSMs first by using the **install all** command and then you upgrade the VEMs.

- You can upgrade the hosts in the DVS a few at a time across multiple maintenance windows. The only exception is if you are upgrading the VEM alone using VUM with the ESX version unchanged.

Upgrade Procedures

The following table lists the upgrade steps.



Note Ensure that you have changed the VSM mode to advanced, before upgrading VSM. VSG services are not available in the essential mode.

Table 3: Upgrade Paths from Cisco Nexus 1000V Releases

If you are running this configuration	Follow these steps
Release 4.0(4)SV1(1), 4.0(4)SV1(2), 4.2(1)SV1(4), 4.2(1)SV1(5.1), and 4.2(1)SV1(5.2)	Direct upgrades from these releases are not supported.
Releases 4.0(4)SV1(3x) Series	<ol style="list-style-type: none"> 1. Upgrading from Releases 4.0(4)SV1(3,3a,3b,3c,3d) to release 4.2(1)SV2(1.1) or later at the following URL: http://www.cisco.com/c/en/us/td/docs/switches/datacenter/nexus1000/sw/4_2_1_s_v_1_4_b/upgrade/software/guide/n1000v_upgrade_software.html#wp465259 2. Upgrade from Releases 4.2(1)SV2(1.1) and later releases to the current release.

If you are running this configuration	Follow these steps
Release 4.2(1)SV1(4x) Series with a vSphere release 4.0 Update 1 or later	<ol style="list-style-type: none"> 1. Upgrading from VMware Release 4.0 to VMware Release 5.0 or later. 2. Upgrading VSMs from releases 4.2(1)SV1(4x) to 4.2(1)SV2(1.1) or later. 3. Upgrading VEMs from releases 4.2(1)SV1(4x) to 4.2(1)SV2(1.1) or later. 4. Upgrading VSMs from releases 4.2(1)SV2(1.1) or later to current release. 5. Upgrading VEMs from releases 4.2(1)SV2(1.1) or later to current release.
Release 4.2(1)SV1(4x) Series with a vSphere release 4.1 GA, patches, or updates	<ol style="list-style-type: none"> 1. Upgrading from VMware Release 4.1 to VMware Release 5.0 or later. 2. Upgrading VSMs from releases 4.2(1)SV1(4x) to 4.2(1)SV2(1.1) or later. 3. Upgrading VEMs from releases 4.2(1)SV1(4x) to 4.2(1)SV2(1.1) or later. 4. Upgrading VSMs from releases 4.2(1)SV2(1.1) or later to current release. 5. Upgrading VEMs from releases 4.2(1)SV2(1.1) or later to current release.
Release 4.2(1)SV1(4x) with a vSphere release 5.0 GA, patches, or updates.	<ol style="list-style-type: none"> 1. Upgrading VSMs from releases 4.2(1)SV1(4x) to 4.2(1)SV2(1.1) or later. 2. Upgrading VEMs from releases 4.2(1)SV1(4x) to 4.2(1)SV2(1.1) or later. 3. Upgrading VSMs from releases 4.2(1)SV2(1.1) or later to current release. 4. Upgrading VEMs from releases 4.2(1)SV2(1.1) or later to current release.

The following table lists the upgrade steps when upgrading from Release 4.2(1)SV1(5x) and later releases to the current release.

Table 4: Upgrade Paths from Releases 4.2(1)SV1(5x) and Later Releases

If you are running this configuration	Follow these steps
With vSphere 4.1 GA, patches, or updates.	<ol style="list-style-type: none"> 1. Upgrading from VMware Release 4.1 to VMware Release 5.0 or later. 2. Upgrading VSMs from releases 4.2(1)SV1(5.1x) to 4.2(1)SV2(1.1) or later. 3. Upgrading VEMs from releases 4.2(1)SV1(5.1x) to 4.2(1)SV2(1.1) or later. 4. Upgrading VSMs from releases 4.2(1)SV2(1.1) or later to current release. 5. Upgrading VEMs from releases 4.2(1)SV2(1.1) or later to current release.
With vSphere 5.0 GA, patches, or updates.	<ol style="list-style-type: none"> 1. Upgrading VSMs from releases 4.2(1)SV1(5.1x) to 4.2(1)SV2(1.1) or later. 2. Upgrading VEMs from releases 4.2(1)SV1(5.1x) to 4.2(1)SV2(1.1) or later. 3. Upgrading VSMs from releases 4.2(1)SV2(1.1) or later to current release. 4. Upgrading VEMs from releases 4.2(1)SV2(1.1) or later to current release.
With ESX version upgrade.	Installing and Upgrading VMware

Reserving the Memory and CPU on the Virtual Supervisor Module Virtual Machine

From the current release of Cisco Nexus 1000V software, the VSM requires 4-GB RAM and two 2048-MHz vCPUs reservation to accommodate the new scalability limits.



Note When you install the Cisco Nexus 1000V software VSM through the OVA files for the first time, the RAM and CPU reservations are automatically reflected.

To upgrade to the current release of Cisco Nexus 1000V software and update the CPU and RAM reservations, use the following procedure:

Procedure

- Step 1** Upgrade from the previous release of Cisco Nexus 1000V software to the current release of Cisco Nexus 1000V software.
- Step 2** Once the upgrade is complete, power off the secondary VSM.
- Step 3** Change the RAM size from 2 or 3 GB to 4 GB and change the RAM reservation from 2 or 3 GB to 4 GB.
- Step 4** Under CPU settings, change the number of vCPUs to 2 and change the CPU reservation from 1.5 GHz to 2048 MHz.
- Step 5** Power on the secondary VSM.
- Step 6** Perform a system switch over to get the secondary VSM as Active.
- Step 7** Power off the primary VSM and repeat steps 3 to 6.
- Step 8** After the primary and secondary VSM have the correct CPU and RAM reservations, the VSM is able to accommodate the scale numbers that are supported on Release 5.2(1)SV3(1.1) or later.
- Note** You do not have to change the CPU and RAM reservations to continue to support for the scale numbers supported in releases prior to Release 5.2(1)SV3(1.1).
-

Reserving the Memory and CPU for the Virtual Supervisor Module in VSB on the Cloud Services Platform

To change the memory reservations in the VSM VSB, use the following procedure:

Before you begin

From the current release of Cisco Nexus 1000V software, the VSM requires 4-GB RAM and two vCPUs to accommodate the new scalability limits.

Procedure

- Step 1** Login to the Cloud Services Platform command prompt.
- Step 2** Enter the VSM configuration mode.
- Step 3** Change the RAM size to 4 GB and change the vCPU number to 2.
- Note** With Cisco Nexus Cloud Services Platform Release 4.2(1)SP1(6.1) and later, the virtual service blades can remain powered on when you change the RAM size. In Cisco Nexus Cloud Services Platform releases earlier than 4.2(1)SP1(6.1), the primary/secondary virtual service blades must be powered off before you can change the RAM size.
- Step 4** Copy the running configuration to the startup configuration.
- Step 5** Reboot the secondary VSM VSB by using the **shut** and **no shut** commands.
- Step 6** Check if the secondary VSM has 4-GB RAM and two vCPUs.

- Step 7** Perform a system switch over from the primary VSM to make the secondary VSM as active with 4-GB RAM and two vCPUs.

The primary VSM reboots and is in the standby state with 4-GB RAM and two vCPUs.

Reserving the Memory and CPU for the Virtual Supervisor Module in VSB on the Cloud Services Platform Using the CLI

To change the memory reservations in the VSM VSB using the CLI, use the following procedure:

Before you begin

From the current release of Cisco Nexus 1000V software, VSM requires 4 GB RAM to accommodate the new scalability limits.

Procedure

	Command or Action	Purpose
Step 1	CSP configure terminal	Enters the global configuration mode.
Step 2	CSP(config)# virtual-service-blade <i>VSM for the current release</i>	Enters the VSM configuration mode.
Step 3	CSP(config-vs-b-config)# ramsize 4096	Change the RAM size to 4 GB. Note The virtual service blade is powered ON. Restart the VSB to reflect the change in RAM size. Perform a shutdown using the shutdown and no shutdown commands.
Step 4	CSP(config-vs-b-config)# numcpu 2	Changing the number of CPUs to 2.
Step 5	CSP(config-vs-b-config)# copy running-config startup-config	Copies the running configuration to the startup configuration.
Step 6	CSP(config-vs-b-config)# shutdown secondary	Shuts down the secondary VSB.
Step 7	CSP(config-vs-b-config)# no shutdown secondary	Applies the RAM and vCPU changes.
Step 8	VSM# system switchover	Performs a system switch over from primary VSM to make the secondary VSM as active with 4 GB RAM and two vCPUs.
Step 9	VSM(standby)# show system resources	Displays that the secondary VSM has 4 GB of RAM and two vCPUs.

VSM Upgrade Procedures

Software Images

The software image install procedure is dependent on the following factors:

- Software images—The kickstart and system image files reside in directories or folders that you can access from the Cisco Nexus 1000V software prompt.
- Image version—Each image file has a version.
- Disk—The bootflash: resides on the VSM.
- ISO file—If a local ISO file is passed to the **install all** command, the kickstart and system images are extracted from the ISO file.

In-Service Software Upgrades on Systems with Dual VSMs

The Cisco Nexus 1000V software supports in-service software upgrades (ISSUs) for systems with dual VSMs. An ISSU can update the software images on your switch without disrupting data traffic. Only control traffic is disrupted. If an ISSU causes a disruption of data traffic, the Cisco Nexus 1000V software warns you before proceeding so that you can stop the upgrade and reschedule it to a time that minimizes the impact on your network.



Note

On systems with dual VSMs, you should have access to the console of both VSMs to maintain connectivity when the switchover occurs during upgrades. If you are performing the upgrade over Secure Shell (SSH) or Telnet, the connection will drop when the system switchover occurs, and you must reestablish the connection.

An ISSU updates the following images:

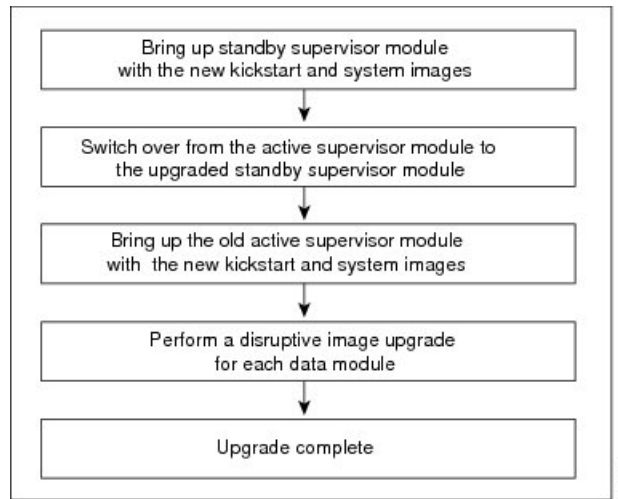
- Kickstart image
- System image
- VEM images

All of the following processes are initiated automatically by the upgrade process after the network administrator enters the **install all** command.

ISSU Process for the Cisco Nexus 1000V

The following figure shows the ISSU process.

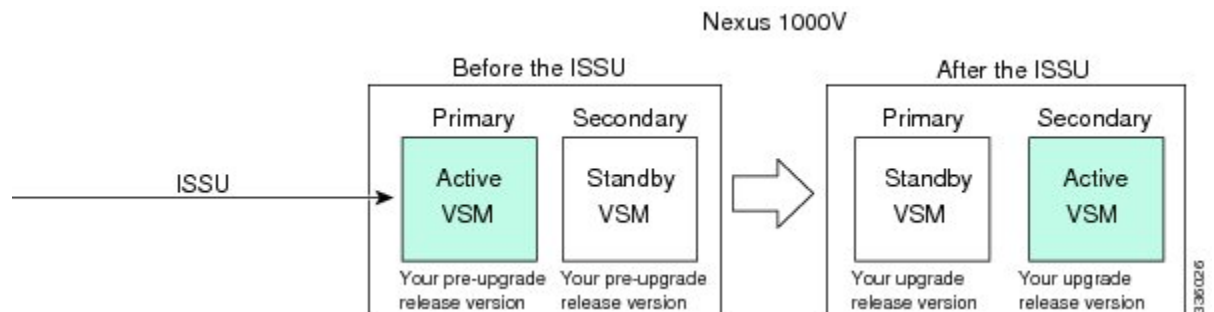
Figure 1: ISSU Process



ISSU VSM Switchover

The following figure provides an example of the VSM status before and after an ISSU switchover.

Figure 2: Example of an ISSU VSM Switchover



ISSU Command Attributes

Support

The **install all** command supports an in-service software upgrade (ISSU) on dual VSMs in an HA environment and performs the following actions:

- Determines whether the upgrade is disruptive and asks if you want to continue.
- Copies the kickstart and system images to the standby VSM. Alternatively, if a local ISO file is passed to the **install all** command instead, the kickstart and system images are extracted from the file.
- Sets the kickstart and system boot variables.
- Reloads the standby VSM with the new Cisco Nexus 1000V software.
- Causes the active VSM to reload when the switchover occurs.

Benefits

The **install all** command provides the following benefits:

- You can upgrade the VSM by using the **install all** command.
- You can receive descriptive information on the intended changes to your system before you continue with the installation.
- You have the option to cancel the command. Once the effects of the command are presented, you can continue or cancel when you see this question (the default is no):

```
Do you want to continue (y/n) [n]: y
```
- You can upgrade the VSM using the least disruptive procedure.
- You can see the progress of this command on the console, Telnet, and SSH screens:
 - After a switchover process, you can see the progress from both the VSMs.
 - Before a switchover process, you can see the progress only from the active VSM.
- The **install all** command automatically checks the image integrity, which includes the running kickstart and system images.
- The **install all** command performs a platform validity check to verify that a wrong image is not used.
- The Ctrl-C escape sequence gracefully ends the **install all** command. The command sequence completes the update step in progress and returns to the switch prompt. (Other upgrade steps cannot be ended by using Ctrl-C.)
- After running the **install all** command, if any step in the sequence fails, the command completes the step in progress and ends.

Upgrading VSMs from Releases 4.2(1)SV2(1.1) and Later Releases to Release 5.2(1)SV3(1.2) and Later Release

Procedure

-
- Step 1** Log in to the active VSM.
- Step 2** Log in to Cisco.com to access the links provided in this document. To log in to Cisco.com, go to the URL <http://www.cisco.com/> and click **Log In** at the top of the page. Enter your Cisco username and password.
- Note** Unregistered Cisco.com users cannot access the links provided in this document.
- Step 3** Access the Software Download Center by using this URL:
<http://www.cisco.com/public/sw-center/index.shtml>
- Step 4** Navigate to the download site for your system.
 You see links to the download images for your switch.
- Step 5** Choose and download the Cisco Nexus 1000V zip file and extract the kickstart and system software files to a server.

- Step 6** Ensure that the required space is available for the image file(s) to be copied by entering the **dir bootflash:** command.
- Tip** We recommend that you have the kickstart and system image files for at least one previous release of the Cisco Nexus 1000V software on the system to use if the new image files do not load successfully.
- Step 7** Verify that there is space available on the standby VSM by entering the **dir bootflash://sup-standby/** command .
- Step 8** Delete any unnecessary files to make space available if you need more space on the standby VSM.
- Step 9** If you plan to install the images from the bootflash:, copy the Cisco Nexus 1000V kickstart and system images or the ISO image to the active VSM by using a transfer protocol. You can use ftp:, tftp:, scp:, or sftp:. The examples in this procedure copies a kickstart and system image using scp:.
- Note** When you download an image file, change to your FTP environment IP address or DNS name and the path where the files are located.
- a) switch# **copy scp://filepath/kickstart_filename bootflash:kickstart_filename**
Copy the ISO image.
- b) switch# **copy scp://filepath/system_filename bootflash:system_filename**
Copy kickstart and system images.
- Step 10** switch# **show install all impact kickstart bootflash:kickstart_filename system bootflash:system_filename**
Verify the ISSU upgrade for the kickstart and system images or the ISO image. The example in this procedure shows the kickstart and system images.
- Step 11** Read the release notes for the related image file. See the *Cisco Nexus 1000V Release Notes*.
- Step 12** Determine if the Cisco Virtual Security Gateway (Cisco VSG) is configured in the deployment by using the **show vnm-pa status** command .
- Note** If an output displaying a successful installation is displayed as in the example, the Cisco VSG is configured in the deployment. You must follow the upgrade procedure in the *Cisco Virtual Security Gateway and Cisco Virtual Network Management Center Installation and Upgrade Guide*. If an output displaying that the policy agent has not installed is displayed, continue to Step 13.
- Step 13** Save the running configuration to the startup configuration by using the **copy running-config startup-config** command.
- Step 14** Save the running configuration on the bootflash and externally.
- Note** You can also run a VSM backup. See the “Configuring VSM Backup and Recovery” chapter of the *Cisco Nexus 1000V System Management Configuration Guide*.
- a) Save the running configuration on the bootflash by using the **copy running-config bootflash:run-cfg-backup** command.
- b) Save the running configuration externally by using the **copy running-config scp://external_backup_location** command.
- Step 15** Perform the upgrade on the active VSM using the ISO or kickstart and system images by using the **install all kickstart bootflash:kickstart_filename system bootflash:system_filename** command. The example in this procedure shows the kickstart and system images.

- Step 16** Continue with the installation by pressing **Y**.
If you press **N**, the installation exits gracefully.
- Note** As part of the upgrade process, the standby VSM is reloaded with new images. Once it becomes the HA standby again, the upgrade process initiates a switchover. The upgrade then continues from the new active VSM.
- Step 17** After the installation operation completes, log in and verify that the switch is running the required software version by using the switch# **show version** command
- Step 18** Copy the running configuration to the startup configuration to adjust the startup-config size by using the switch# **copy running-config startup-config** command
- Step 19** Display the log for the last installation by entering the following commands.
- switch# **show install all status**
 - switch# **attach module_name**
 - switch# **show install all status**
- Step 20** Review information about reserving memory and CPU on the VSM VM at the following URL: [Reserving the Memory and CPU on the Virtual Supervisor Module Virtual Machine](#).
- Note** You must review this information, to accommodate the new scalability limits.

VEM Upgrade Procedures

Prerequisites for Upgrading VEMs



Caution If VMware vCenter Server is hosted on the same ESX/ESXi host as a Cisco Nexus 1000V VEM, a VUM-assisted upgrade on the host fails. You should manually VMotion the vCenter Server VM to another host before you perform an upgrade.



Note When you perform any VUM operation on hosts that are a part of a cluster, ensure that VMware HA, VMware fault tolerance (FT), and VMware Distributed Power Management (DPM) features are disabled for the entire cluster. Otherwise, VUM will fail to install the hosts in the cluster.

- If you have VXLAN Gateway installed in your deployment, we recommend that you upgrade the VXLAN gateway service module after upgrading the VSM and *before* upgrading the VEM. This recommendation applies to upgrades to Release 5.2(1)SV3(1.1) and later only.
- You are logged in to the VSM command-line interface (CLI) in EXEC mode.
- You have a copy of your VMware documentation available for installing software on a host.
- You have already obtained a copy of the VEM software file. For more information, see the *Cisco Nexus 1000V and VMware Compatibility Information* document.

- If you need to migrate a vSphere host from ESX to ESXi, do it before the Cisco Nexus 1000V upgrade.
- You have placed the VEM software file in `/tmp` on the vSphere host. Placing it in the root (`/`) directory might interfere with the upgrade. Make sure that the root RAM disk has at least 12 MB of free space by entering the `vdf` command.
- On your upstream switches, you must have the following configuration.
 - On Catalyst 6500 Series switches with the Cisco IOS software, enter the **portfast trunk** command or the **portfast edge trunk** command.
 - On Cisco Nexus 5000 Series switches with the Cisco NX-OS software, enter the **spanning-tree port type edge trunk** command.
- On your upstream switches, we highly recommend that you globally enable the following:
 - Global BPDU Filtering
 - Global BPDU Guard
- On your upstream switches where you cannot globally enable BPDU Filtering and BPDU Guard, we highly recommend that you enter the following commands:
 - **spanning-tree bpdu filter**
 - **spanning-tree bpdu guard**
- The collectors must be L3 reachable from at least one vmknic on each VEM host.
- Strict Reverse Path Forwarding (RPF) may require disabling on the routers between the VEMs and the collectors.
- For more information about configuring spanning tree, BPDU, or PortFast, see the documentation for your upstream switch.

Upgrading Using a Customized ISO with a VMware ESX Image and a Cisco Nexus 1000V VEM Image

Before you begin

- Install the VMware PowerCLI on a Windows platform. For more information, see the *VMware vSphere PowerCLI Installation Guide*.
- On the same Windows platform, where the VMware PowerCLI is installed, do one of the following:
 - Download the ESX depot, which is a .zip file, to a local file path.
 - Download the VEM offline bundle, which is a .zip file, to a local file path.

Procedure

-
- Step 1** Start the VMWare PowerCLI application.

- Step 2** Connect to the vCenter Server by using the **Connect-VIServer** *IP_address -User Administrator -Password password_name* command.
- Step 3** Load the ESX depot by using the **Add-ESXSoftwareDepot** *path_name/file_name* command.
- Step 4** Display the image profiles by using the **Get-EsxImageProfile** command.
- Step 5** Clone the ESX standard image profile by using the **New-ESXImageProfile -CloneProfile** *ESXImageProfile_name -Name clone_profile* command.
- Note** The image profiles are usually in READ-ONLY format. You must clone the image profile before adding the VEM image to it.
- Step 6** Load the Cisco Nexus 1000V VEM offline bundle by using the **Add-EsxSoftwareDepot** *VEM_offline_bundle* command.
- Step 7** Confirm that the n1kv-vib package is loaded by using the **Get-EsxSoftwarePackage -Name** *package_name* command.
- Step 8** Bundle the n1kv-package into the cloned image profile by using the **Add-EsxSoftwarePackage -ImageProfile** *n1kv-Image -SoftwarePackage cloned_image_profile* command.
- Step 9** Verify that the Cisco VIB is present by listing all the VIBs in the cloned image profile by entering the following commands.
- \$img = Get-EsxImageProfile n1kv-Image**
 - \$img.vibList**
- Verify that the Cisco VIB is present by listing all the VIBs in the cloned image profile.
- Step 10** Export the image profile to an ISO file by using the **Export-EsxImageProfile -ImageProfile** *n1kv-Image -FilePath iso_filepath* command.

This example shows how to create an upgrade ISO with a VMware ESX image and a Cisco VEM image.



Note The example may contain Cisco Nexus 1000V versions and filenames that are not relevant to your release. Refer to the *Cisco Nexus 1000V and VMware Compatibility Information* for your specific versions and filenames.

```
vSphere PowerCLI> Connect-VIServer 10.105.231.40 -User administrator -Password 'XXXXXXXX'
```

```
Working with multiple default servers?
```

```
Select [Y] if you want to work with more than one default servers. In this case, every time when you connect to a different server using Connect-VIServer, the new server connection is stored in an array variable together with the previously connected servers. When you run a cmdlet and the target servers cannot be determined from the specified parameters, the cmdlet runs against all servers stored in the array variable.
```

```
Select [N] if you want to work with a single default server. In this case, when you run a cmdlet and the target servers cannot be determined from the specified parameters, the cmdlet runs against the last connected server.
```

```
WARNING: WORKING WITH MULTIPLE DEFAULT SERVERS WILL BE ENABLED BY DEFAULT IN A FUTURE RELEASE. You can explicitly set your own preference at any time by
```

using the DefaultServerMode parameter of Set-PowerCLIConfiguration.

[Y] Yes [N] No [S] Suspend [?] Help (default is "Y"): Y

Name	Port	User
----	----	----
10.105.231.40	443	administrator

```
vSphere PowerCLI> Add-EsxSoftwareDepot 'C:\Documents and
Settings\Administrator\Desktop\upgrade\229\VEM650-201703390111-BG-release.zip'
```

```
Depot Url
-----
zip:C:\Documents and Settings\Administrator\Desktop\upgrade\229\VMware-ESXi-...
```

```
vSphere PowerCLI> Get-EsxImageProfile
```

Name	Vendor	Last Modified	Acceptance Level
----	-----	-----	-----
ESXi-5.1.0-201508198107s-no-... CN1-CY	VMware, Inc. CISCO	08/12/2015 7:...	PartnerSupported
ESXi-5.1.0-20121204001-stan...	VMware, Inc.	12/7/2012 7:...	PartnerSupported
ESXi-5.1.0-20121201001s-sta...	VMware, Inc.	12/7/2012 7:...	PartnerSupported
ESXi-5.1.0-799733-no-tools	VMware, Inc.	8/2/2012 3:0...	PartnerSupported
ESXi-5.1.0-20121204001-no-t...	VMware, Inc.	12/7/2012 7:...	PartnerSupported
ESXi-5.1.0-799733-standard	VMware, Inc.	8/2/2012 3:0...	PartnerSupported

```
vSphere PowerCLI> New-EsxImageProfile -CloneProfile ESXi-6.5.0-799733-standard -Name FINAL
```

cmdlet New-EsxImageProfile at command pipeline position 1

Supply values for the following parameters:

(Type !? for Help.)

Vendor: CISCO

Name	Vendor	Last Modified	Acceptance Level
----	-----	-----	-----
FINAL	CISCO	09/09/2016 3:0...	PartnerSupported

```
vSphere PowerCLI> Add-EsxSoftwareDepot 'C:\Documents and
Settings\Administrator\Desktop\upgrade\229
\VEM650-201703390111-BG-release.zip'
```

```
Depot Url
-----
zip:C:\Documents and Settings\Administrator\Desktop\upgrade\229\cisco-vem-v1...
```

```
vSphere PowerCLI> Get-EsxSoftwarePackage cisco*
```

Name	Version	Vendor	Creation
-----	-----	-----	-----
cisco-vem-v390-esx 2017-03-01	5.2.1.3.3.1.0-6.5.1	Cisco	PartnerSupported

```
vSphere PowerCLI> Add-EsxSoftwarePackage -SoftwarePackage cisco-vem-v198-esx -ImageProfile
FINAL
```

Name	Vendor	Last Modified	Acceptance Level
----	-----	-----	-----
FINAL	CISCO	12/05/2016 3:...	PartnerSupported

```
vSphere PowerCLI> $img = Get-EsxImageProfile FINAL
```

```
vSphere PowerCLI> $img.vibList
```

Name	Version	Vendor	Creation Date
----	-----	-----	-----
scsi-bnx2i	1.9.1d.v50.1-5vmw.510.0.0.7...	VMware	8/2/2012 ...
sata-sata-promise	2.12-3vmw.510.0.0.799733	VMware	8/2/2012 ...
net-forcedeth	0.61-2vmw.510.0.0.799733	VMware	8/2/2012 ...
esx-xserver	5.1.0-0.0.799733	VMware	8/2/2012 ...
misc-cnic-register	1.1-1vmw.510.0.0.799733	VMware	8/2/2012 ...
net-tg3	3.110h.v50.4-4vmw.510.0.0.7...	VMware	8/2/2012 ...
scsi-megaraid-sas	5.34-4vmw.510.0.0.799733	VMware	8/2/2012 ...
scsi-megaraid-mbox	2.20.5.1-6vmw.510.0.0.799733	VMware	8/2/2012 ...
scsi-ips	7.12.05-4vmw.510.0.0.799733	VMware	8/2/2012 ...
net-e1000e	1.1.2-3vmw.510.0.0.799733	VMware	8/2/2012 ...
sata-ahci	3.0-13vmw.510.0.0.799733	VMware	8/2/2012 ...
sata-sata-svw	2.3-3vmw.510.0.0.799733	VMware	8/2/2012 ...
net-cnic	1.10.2j.v50.7-3vmw.510.0.0....	VMware	8/2/2012 ...
net-e1000	8.0.3.1-2vmw.510.0.0.799733	VMware	8/2/2012 ...
ata-pata-serverworks	0.4.3-3vmw.510.0.0.799733	VMware	8/2/2012 ...
scsi-mptspi	4.23.01.00-6vmw.510.0.0.799733	VMware	8/2/2012 ...
ata-pata-hpt3x2n	0.3.4-3vmw.510.0.0.799733	VMware	8/2/2012 ...
net-s2io	2.1.4.13427-3vmw.510.0.0.79...	VMware	8/2/2012 ...
esx-base	5.1.0-0.0.799733	VMware	8/2/2012 ...
net-vmxnet3	1.1.3.0-3vmw.510.0.0.799733	VMware	8/2/2012 ...
net-bnx2	2.0.15g.v50.11-7vmw.510.0.0...	VMware	8/2/2012 ...
cisco-vem-v320-esx	5.2.1.3.2.8.0-3.1.2	Cisco	2016-09-09
scsi-megaraid2	2.00.4-9vmw.510.0.0.799733	VMware	8/2/2012 ...
ata-pata-amd	0.3.10-3vmw.510.0.0.799733	VMware	8/2/2012 ...
ipmi-ipmi-si-drw	39.1-4vmw.510.0.0.799733	VMware	8/2/2012 ...
scsi-lpfc820	8.2.3.1-127vmw.510.0.0.799733	VMware	8/2/2012 ...
ata-pata-atiixp	0.4.6-4vmw.510.0.0.799733	VMware	8/2/2012 ...
esx-dvfilter-generic-...	5.1.0-0.0.799733	VMware	8/2/2012 ...
net-sky2	1.20-2vmw.510.0.0.799733	VMware	8/2/2012 ...
scsi-qla2xxx	902.k1.1-9vmw.510.0.0.799733	VMware	8/2/2012 ...
net-r8169	6.011.00-2vmw.510.0.0.799733	VMware	8/2/2012 ...
sata-sata-sil	2.3-4vmw.510.0.0.799733	VMware	8/2/2012 ...
scsi-mpt2sas	10.00.00.00-5vmw.510.0.0.79...	VMware	8/2/2012 ...
sata-ata-piix	2.12-6vmw.510.0.0.799733	VMware	8/2/2012 ...
scsi-hpsa	5.0.0-21vmw.510.0.0.799733	VMware	8/2/2012 ...
ata-pata-via	0.3.3-2vmw.510.0.0.799733	VMware	8/2/2012 ...
scsi-aacraid	1.1.5.1-9vmw.510.0.0.799733	VMware	8/2/2012 ...
scsi-rste	2.0.2.0088-1vmw.510.0.0.799733	VMware	8/2/2012 ...
ata-pata-cmd64x	0.2.5-3vmw.510.0.0.799733	VMware	8/2/2012 ...
ima-qla4xxx	2.01.31-1vmw.510.0.0.799733	VMware	8/2/2012 ...
net-igb	2.1.11.1-3vmw.510.0.0.799733	VMware	8/2/2012 ...
scsi-qla4xxx	5.01.03.2-4vmw.510.0.0.799733	VMware	8/2/2012 ...
block-cciss	3.6.14-10vmw.510.0.0.799733	VMware	8/2/2012 ...
scsi-aic79xx	3.1-5vmw.510.0.0.799733	VMware	8/2/2012 ...
tools-light	5.1.0-0.0.799733	VMware	8/2/2012 ...
uhci-usb-uhci	1.0-3vmw.510.0.0.799733	VMware	8/2/2012 ...
sata-sata-nv	3.5-4vmw.510.0.0.799733	VMware	8/2/2012 ...
sata-sata-sil24	1.1-1vmw.510.0.0.799733	VMware	8/2/2012 ...
net-ixgbe	3.7.13.6iov-10vmw.510.0.0.7...	VMware	8/2/2012 ...
ipmi-ipmi-msghandler	39.1-4vmw.510.0.0.799733	VMware	8/2/2012 ...
scsi-adp94xx	1.0.8.12-6vmw.510.0.0.799733	VMware	8/2/2012 ...
scsi-fnic	1.5.0.3-1vmw.510.0.0.799733	VMware	8/2/2012 ...
ata-pata-pdc2027x	1.0-3vmw.510.0.0.799733	VMware	8/2/2012 ...
misc-drivers	5.1.0-0.0.799733	VMware	8/2/2012 ...
net-enic	1.4.2.15a-1vmw.510.0.0.799733	VMware	8/2/2012 ...
net-be2net	4.1.255.11-1vmw.510.0.0.799733	VMware	8/2/2012 ...
net-nx-nic	4.0.558-3vmw.510.0.0.799733	VMware	8/2/2012 ...
esx-xlibs	5.1.0-0.0.799733	VMware	8/2/2012 ...
net-bnx2x	1.61.15.v50.3-1vmw.510.0.0....	VMware	8/2/2012 ...


```
ehci-ehci-hcd          1.0-3vmw.510.0.0.799733    VMware    8/2/2012 ...
ohci-usb-ohci         1.0-3vmw.510.0.0.799733    VMware    8/2/2012 ...
net-r8168              8.013.00-3vmw.510.0.0.799733  VMware    8/2/2012 ...
esx-tboot             5.1.0-0.0.799733          VMware    8/2/2012 ...
ata-pata-sil680       0.4.8-3vmw.510.0.0.799733    VMware    8/2/2012 ...
ipmi-ipmi-devintf     39.1-4vmw.510.0.0.799733    VMware    8/2/2012 ...
scsi-mptsas           4.23.01.00-6vmw.510.0.0.799733  VMware    8/2/2012 ...
```

```
vSphere PowerCLI> Export-EsxImageProfile -ImageProfile FINAL -FilePath 'C:\Documents and
Settings\Administrator\Desktop\FINAL.iso' -ExportToIso
```

Upgrading the vCenter Server



Note This upgrade procedure applies to vCenter Server 5.0, 5.0 Update 1 and later, 5.1, and 5.5 versions.

Before you begin

- Download the upgrade ISO file that contains your desired ESXi image and the desired Cisco Nexus 1000V image.
- See the *Cisco Nexus 1000V and VMware Compatibility Information* document to determine the correct VIB Version, VEM Bundle, Host Build, vCenter Server, and Update Manager versions.

Procedure

- Step 1** Navigate to the VMware vSphere installation file.
- Note** If you have the ISO image, you should mount it on the host.
- Step 2** Double-click **autorun**.
- Step 3** In the **VMware vCenter Installer** screen, click **vCenter Server**.
- Step 4** Click **Install**.
- Step 5** Choose a language and click **OK**.
- Step 6** Click **Next**.
- Step 7** In the **Patent Agreement** screen, click **Next**.
- Step 8** In the **License Agreement** screen, click the **I agree to the terms in the license agreement** radio button.
- Step 9** Click **Next**.
- Step 10** In the **Database Options** screen, click **Next**.
- Step 11** Click the **Upgrade existing vCenter Server database** radio button and check the **I have taken a backup of the existing vCenter Server database and SSL certificates in the folder: C:\ProgramData\VMware\VMware VirtualCenter\SSL** check box.
- Step 12** From the **Windows Start** Menu, click **Run**.
- Step 13** Enter the name of the folder that contains the vCenter Server database and click **OK**.
- Step 14** Drag a copy of the parent folder (SSL) to the desktop as a backup.

- Step 15** Return to the installer program.
- Step 16** Click **Next**.
- Step 17** In the **vCenter Agent Upgrade** screen, click the **Automatic** radio button.
- Step 18** Click **Next**.
- Step 19** In the **vCenter Server Service** screen, check the **Use SYSTEM Account** check box.
- Step 20** Click **Next**.
- Step 21** Review the port settings and click **Next**.
- Step 22** In the **vCenter Server JVM Memory** screen based on the number of hosts, click the appropriate memory radio button.
- Step 23** Click **Next**.
- Step 24** Click **Install**.
- Step 25** Click **Finish**.
- This step completes the upgrade of the vCenter Server.
- Step 26** Upgrade the VMware vSphere Client to your desired ESXi version.
- Step 27** Open the VMware vSphere Client.
- Step 28** From the **Help** menu, choose **About VMware vSphere**.
- Step 29** Confirm that the vSphere Client and the VMware vCenter Server are both the same VMware versions.
- Step 30** Click **OK**, and exit the VMware vSphere Client.

What to do next

Complete the steps in [Upgrading the vCenter Update Manager to Release 6.0](#).

Upgrading VEMs Using VUM

The steps to upgrade VEMS using VUM are as follows:

Procedure

- Step 1** Upgrade the VEM from the VSM. See [Upgrading the VEMs Using VMware Update Manager from Release 4.2\(1\)SV2\(1.1x\) and Later Releases to the Current Release](#), on page 27.
- Step 2** Upgrade the VEM software. See [Upgrading the VEM Software Using the vCLI](#), on page 31.
- Step 3** Upgrade both ESX and Cisco Nexus 1000V. See [Combined Upgrade of VMware vSphere and Cisco Nexus 1000V](#), on page 37.
-

Upgrading the VEMs Using VMware Update Manager from Release 4.2(1)SV2(1.1x) and Later Releases to the Current Release



Caution If removable media is still connected (for example, if you have installed the VSM using ISO and forgot to remove the media), host movement to maintenance mode fails and the VUM upgrade fails.

Before you begin

When using VUM, the feature `http-server enable` command must be enabled.

Procedure

Step 1 switch# `show vmware vem upgrade status`

Display the current configuration.

Step 2 switch# `vmware vem upgrade notify`

Coordinate with and notify the server administrator of the VEM upgrade process.

Step 3 switch# `show vmware vem upgrade status`

Verify that the upgrade notification was sent.

Note Verify that the Upgrade Status contains the highlighted text. If the text is not present, check the Upgrade Error line and consult the *Cisco Nexus 1000V Troubleshooting Guide*.

Step 4 switch# `show vmware vem upgrade status`

Verify that the server administrator has accepted the upgrade in the vCenter. For more information about how the server administrator accepts the VEM upgrade, see [Accepting the VEM Upgrade, on page 30](#). Coordinate the notification acceptance with the server administrator. After the server administrator accepts the upgrade, proceed with the VEM upgrade.

Note Verify that the Upgrade Status contains the highlighted text. If the text is not present, check the Upgrade Error line and consult the *Cisco Nexus 1000V Troubleshooting Guide*.

Step 5 Initiate the VUM upgrade process with the following commands.

Note Before entering the following commands, communicate with the server administrator to confirm that the VUM process is operational.

The vCenter Server locks the DVS and triggers VUM to upgrade the VEMs.

- a) switch# `vmware vem upgrade proceed`
- b) switch# `show vmware vem upgrade status`

Note The DVS bundle ID is updated and is highlighted.

If the host is using ESXi 5.0.0 or a later release and your DRS settings are enabled to allow it, VUM automatically VMotions the VMs from the host to another host in the cluster and places the ESXi in maintenance mode to upgrade the VEM. This process is continued for other hosts in the DRS cluster until all the hosts are upgraded in the cluster. For details about DRS settings required and vMotion of VMs, visit the VMware documentation related to Creating a DRS Cluster.

Step 6 switch# **show vmware vem upgrade status**

Check for the upgrade complete status.

Step 7 Clear the VEM upgrade status after the upgrade process is complete with the following commands.

a) switch# **vmware vem upgrade complete**

b) switch# **show vmware vem upgrade status**

Step 8 switch# **show module**

Verify that the upgrade process is complete.

The upgrade is complete.

Example

The following example shows how to upgrade VEMs using VUM.



Note The example may contain Cisco Nexus 1000V versions and filenames that are not relevant to your release. Refer to the *Cisco Nexus 1000V and VMware Compatibility Information* for your specific versions and filenames.

```
switch# show vmware vem upgrade status

Upgrade VIBs: System VEM Image
Upgrade Status:
Upgrade Notification Sent Time:
Upgrade Status Time(vCenter):
Upgrade Start Time:
Upgrade End Time(vCenter):
Upgrade Error:
Upgrade Bundle ID:

      VSM: VEM500-201703390101-BG
      DVS: VEM500-201612340101-BG
switch#
switch# vmware vem upgrade notify
Warning:
Please ensure the hosts are running compatible ESX versions for the upgrade. Refer to
corresponding
"Cisco Nexus 1000V and VMware Compatibility Information" guide.
switch# show vmware vem upgrade status

Upgrade VIBs: System VEM Image
Upgrade Status: Upgrade Availability Notified in vCenter
Upgrade Notification Sent Time: Mon Mar  6 08:49:55 2017
```

```

Upgrade Status Time(vCenter):
Upgrade Start Time:
Upgrade End Time(vCenter):
Upgrade Error:
Upgrade Bundle ID:
  VSM: VEM500-201703390101-BG
  DVS: VEM500-201612340101-BG

```

```
switch# show vmware vem upgrade status
```

```

Upgrade VIBs: System VEM Image
Upgrade Status: Upgrade Accepted by vCenter Admin
Upgrade Notification Sent Time: Mon Mar  6 08:49:55 2017
Upgrade Status Time(vCenter): Mon Mar  6 12:13:43 2017
Upgrade Start Time:
Upgrade End Time(vCenter):
Upgrade Error:
Upgrade Bundle ID:
  VSM: VEM500-201703390101-BG
  DVS: VEM500-201612340101-BG

```

```
switch# vmware vem upgrade proceed
switch# show vmware vem upgrade status
```

```

Upgrade VIBs: System VEM Image
Upgrade Status: Upgrade In Progress in vCenter
Upgrade Notification Sent Time: Mon Mar  6 08:49:55 2017
Upgrade Status Time(vCenter): Mon Mar  6 12:13:43 2017
Upgrade Start Time: Mon Mar  6 08:50:52 2017
Upgrade End Time(vCenter): Mon Mar  6 12:14:09 2017
Upgrade Error:
Upgrade Bundle ID:
  VSM: VEM500-201703390101-BG
  DVS: VEM500-201703390101-BG
switch#

```

```
switch# vmware vem upgrade complete
switch# show vmware vem upgrade status
```

```

Upgrade VIBs: System VEM Image
Upgrade Status:
Upgrade Notification Sent Time:
Upgrade Status Time(vCenter):
Upgrade Start Time:
Upgrade End Time(vCenter):
Upgrade Error:
Upgrade Bundle ID:
  VSM: VEM500-201703390101-BG
  DVS: VEM500-201703390101-BG

```

```
switch#
switch(config)# show module
```

```

show module
Mod  Ports  Module-Type                Model                Status
---  -
1    0      Virtual Supervisor Module  Nexus1000V          active *
2    0      Virtual Supervisor Module  Nexus1000V          ha-standby
4    1022   Virtual Ethernet Module    NA                   ok
5    1022   Virtual Ethernet Module    NA                   ok
6    1022   Virtual Ethernet Module    NA                   ok
7    1022   Virtual Ethernet Module    NA                   ok

```

```

Mod  Sw                      Hw
---  -
1    5.2 (1) SV3 (1.4)      0.0
2    5.2 (1) SV3 (1.4)      0.0
4    5.2 (1) SV3 (1.4)      VMware ESXi 6.0.0 Releasebuild-3620759 (6.0)
5    5.2 (1) SV3 (1.4)      VMware ESXi 6.5.0 Releasebuild-4887370 (6.5)
6    5.2 (1) SV3 (1.4)      VMware ESXi 6.0.0 Releasebuild-3620759 (6.0)
7    5.2 (1) SV3 (1.4)      VMware ESXi 6.5.0 Releasebuild-4887370 (6.5)

Mod  Server-IP                Server-UUID                Server-Name
---  -
1    10.197.132.57            NA                          NA
2    10.197.132.57            NA                          NA
4    10.197.132.43            e6c1a563-bc9e-11e0-bd1d-30e4dbc2baba 10.197.132.43
5    10.197.132.44            7b1a5e63-bcd0-11e0-bd1d-30e4dbc2c3ae 10.197.132.44
6    10.197.132.45            8d8ff0e8-b565-11e0-bd1d-30e4dbc297da 10.197.132.45
7    10.197.132.46            db8b80ac-af1d-11e0-a4e7-30e4dbc26b82 10.197.132.46

* this terminal session

switch(config)#

```



Note The lines with the bold characters in the preceding example display that all VEMs are upgraded to the current release.

Accepting the VEM Upgrade

Before you begin

- The network and server administrators must coordinate the upgrade procedure with each other.
- You have received a notification in the vCenter Server that a VEM software upgrade is available.

Procedure

Step 1 In the vCenter Server, choose **Inventory > Networking**.

Step 2 Click the **vSphere Client DVS Summary** tab to check for the availability of a software upgrade.

Figure 3: vSphere Client DVS Summary Tab



Step 3 Click **Apply upgrade**.

The network administrator is notified that you are ready to apply the upgrade to the VEMs.

Upgrading the VEM Software Using the vCLI

You can upgrade the VEM software by using the vCLI.

Before you begin

- If you are using vCLI, do the following:
 - You have downloaded and installed the VMware vCLI. For information about installing the vCLI, see the VMware vCLI documentation.
 - You are logged in to the remote host where the vCLI is installed.



Note The vSphere command-line interface (vCLI) command set allows you to enter common system administration commands against ESXi systems from any machine with network access to those systems. You can also enter most vCLI commands against a vCenter Server system and target any ESXi system that the vCenter Server system manages. vCLI commands are especially useful for ESXi hosts because ESXi does not include a service console.

- Check *Cisco Nexus 1000V and VMware Compatibility Information* for compatible versions.
- You have already copied the VEM software installation file to the `/tmp` directory. Do not copy the files to the root (`/`) folder.
- You know the name of the VEM software file to be installed.

Procedure

Step 1 `[root@serialport -]# cd tmp`

Go to the directory where the new VEM software was copied.

Step 2 Determine the upgrade method that you want to use and enter the appropriate command.

- **vhostupdate**

Installs the ESXi and VEM software simultaneously if you are using the vCLI.

Step 3 For ESXi 5.0.0 or later hosts, enter the appropriate commands as they apply to you.

- a) `~# esxcli software vib install -d /absolute-path/VEM_bundle`
- b) `~# esxcli software vib install -v /absolute-path/vib_file`

Note You must specify the absolute path to the *VEM_bundle* and *vib_file* files. The absolute path is the path that starts at the root of the file system such as `/tmp/vib_file`.

Step 4 Display values with which to compare to *Cisco Nexus 1000V and VMware Compatibility Information* by typing the following commands.

- a) [root@serialport tmp]# **vmware -v**
- b) root@serialport tmp]# # **esxupdate query**
- c) [root@host212 ~]# . ~ # **vem status -v**
- d) [root@host212 ~]# **vemcmd show version**

Step 5 switch# **show module**

Display that the VEMs were upgraded by entering the command on the VSM.

If the upgrade was successful, the installation procedure is complete.

The following example shows how to upgrade the VEM software using the vCLI.



Note The example may contain Cisco Nexus 1000V versions and filenames that are not relevant to your release. Refer to the *Cisco Nexus 1000V and VMware Compatibility Information* for your specific versions and filenames.

```
[root@serialport ~]# cd tmp
[root@serialport tmp]#
esxupdate -b [VMware offline update bundle] update
~ # esxcli software vib install -d /tmp/VEM650-201703390111-BG-release.zip
Message: Operation finished successfully.
  Reboot Required: false
  VIBs Installed: Cisco_bootbank_cisco-vem-v390-esx_5.2.1.3.3.1.0-6.5.1
  VIBs Removed:
  VIBs Skipped:
~ #

~ # esxcli software vib install -v /tmp/cross_cisco-vem-v390-5.2.1.3.3.1.0-6.5.1.vib
Message: Operation finished successfully.
  Reboot Required: false
  VIBs Installed: Cisco_bootbank_cisco-vem-v390-esx_5.2.1.3.1.4.0-6.5.1
  VIBs Removed:
  VIBs Skipped:
~ #

root@serialport tmp]# # vmware -v -1
VMware ESXi 6.5.0 build-4887370
VMware ESXi 6.5.0 GA

root@serialport tmp]# # esxupdate query
-----Bulletin ID----- Installed----- Summary-----
VEM510-201612340107-BG1 2016-12-05T08:18:22 Cisco Nexus 1000V 5.2(1)SV3(1.4)

~ # vem status -v

vem status -v
Package vssnet-esxesx2016-release
Version 5.2.1.3.1.4.0-6.5.1
Build 1
Date Fri Feb 24 23:22:23 PST 2017
```


VEM modules are loaded

Switch Name	Num Ports	Used Ports	Configured Ports	MTU	Uplinks
vSwitch0	2432	82	128	1500	vmnic0
DVS Name	Num Ports	Used Ports	Configured Ports	MTU	Uplinks
cyp	1024	50	1024	1500	vmnic7,vmnic5,vmnic4

VEM Agent (vemdpa) is running

```
~ # vemcmd show version
vemcmd show version
VEM Version: 5.2.1.3.1.4.0-6.5.1
VSM Version: 5.2(1)SV3(1.4)
System Version: VMware ESXi 6.5.0 Releasebuild-4887370
ESX Version Update Level: 0
```

switch# show module

```
show module
Mod  Ports  Module-Type                Model                Status
---  ---
1    0      Virtual Supervisor Module  Nexus1000V          active *
2    0      Virtual Supervisor Module  Nexus1000V          ha-standby
4    1022   Virtual Ethernet Module    NA                   ok
5    1022   Virtual Ethernet Module    NA                   ok
6    1022   Virtual Ethernet Module    NA                   ok
7    1022   Virtual Ethernet Module    NA                   ok
```

```
Mod  Sw                Hw
---  ---
1    5.2(1)SV3(1.4)   0.0
2    5.2(1)SV3(1.4)   0.0
4    5.2(1)SV3(1.4)   VMware ESXi 6.0.0 Releasebuild-3620759 (6.0)
5    5.2(1)SV3(1.4)   VMware ESXi 6.5.0 Releasebuild-4887370 (6.5)
6    5.2(1)SV3(1.4)   VMware ESXi 6.0.0 Releasebuild-3620759 (6.0)
7    5.2(1)SV3(1.4)   VMware ESXi 6.5.0 Releasebuild-4887370 (6.5)
```

```
Mod  Server-IP          Server-UUID          Server-Name
---  ---
1    10.197.132.57      NA                   NA
2    10.197.132.57      NA                   NA
4    10.197.132.43      e6c1a563-bc9e-11e0-bd1d-30e4dbc2baba  10.197.132.43
5    10.197.132.44      7b1a5e63-bcd0-11e0-bd1d-30e4dbc2c3ae  10.197.132.44
6    10.197.132.45      8d8ff0e8-b565-11e0-bd1d-30e4dbc297da  10.197.132.45
7    10.197.132.46      db8b80ac-af1d-11e0-a4e7-30e4dbc26b82  10.197.132.46
```

* this terminal session

switch#



Note The highlighted text in the previous command output confirms that the upgrade was successful.

Upgrading the VEMs Manually from Release 4.2(1)SV2(1.1x) and Later Releases to the Current Release

Before you begin



Note If VUM is installed, it should be disabled.

To manually install or upgrade the Cisco Nexus 1000V VEM on an ESXi host, follow the steps in [Upgrading the VEM Software Using the vCLI, on page 31](#).

To upgrade the VEMs manually, perform the following steps as network administrator:



Note This procedure is performed by the network administrator. Before proceeding with the upgrade, make sure that the VMs are powered off if you are not running the required patch level.



Caution If removable media is still connected, (for example, if you have installed the VSM using ISO and forgot to remove the media), host movement to maintenance mode fails and the VEM upgrade fails.

Procedure

- Step 1** switch# **vmware vem upgrade notify**
Coordinate with and notify the server administrator of the VEM upgrade process.
- Step 2** switch# **show vmware vem upgrade status**
Verify that the upgrade notification was sent.
- Step 3** switch# **show vmware vem upgrade status**
Verify that the server administrator has accepted the upgrade in vCenter Server. For details about the server administrator accepting the VEM upgrade, see [Accepting the VEM Upgrade, on page 30](#). After the server administrator accepts the upgrade, proceed with the VEM upgrade.
- Step 4** Perform one of the following tasks:
- If the ESXi host is not hosting the VSM, proceed to Step 5.
 - If the ESXi host is hosting the VSM, coordinate with the server administrator to migrate the VSM to a host that is not being upgraded. Proceed to Step 5.
- Step 5** switch# **vmware vem upgrade proceed**
Initiate the Cisco Nexus 1000V Bundle ID upgrade process.

Note If VUM is enabled in the vCenter environment, disable it before entering the **vmware vem upgrade proceed** command to prevent the new VIBs from being pushed to all the hosts.

Enter the **vmware vem upgrade proceed** command so that the Cisco Nexus 1000V Bundle ID on the vCenter Server gets updated. If VUM is enabled and you do not update the Bundle ID, an incorrect VIB version is pushed to the VEM when you next add the ESXi to the VSM.

Note If VUM is not installed, the “The object or item referred to could not be found” error appears in the vCenter Server task bar. You can ignore this error message.

Step 6 switch# **show vmware vem upgrade status**

Check for the upgrade complete status.

Step 7 Coordinate with and wait until the server administrator upgrades all ESXi host VEMs with the new VEM software release and informs you that the upgrade process is complete.

The server administrator performs the manual upgrade by using the **vihostupdate** command or the **esxcli** command. For more information, see [Upgrading the VEM Software Using the vCLI, on page 31](#).

Step 8 switch# **vmware vem upgrade complete**

Clear the VEM upgrade status after the upgrade process is complete.

Step 9 switch# **show vmware vem upgrade status**

Check the upgrade status once again.

Step 10 switch# **show module**

Verify that the upgrade process is complete.

Note The line with the bold characters in the preceding example display that all VEMs are upgraded to the current release.

The upgrade is complete.

Example

The following example shows how to upgrade VEMs manually.



Note The example may contain Cisco Nexus 1000V versions and filenames that are not relevant to your release. Refer to the *Cisco Nexus 1000V and VMware Compatibility Information* for your specific versions and filenames.

```
switch# show vmware vem upgrade status

Upgrade VIBs: System VEM Image
Upgrade Status:
Upgrade Notification Sent Time:
Upgrade Status Time(vCenter):
Upgrade Start Time:
Upgrade End Time(vCenter):
```

```

Upgrade Error:
Upgrade Bundle ID:
  VSM: VEM500-201703390101-BG
  DVS: VEM500-201612340101-BG
switch#
switch# vmware vem upgrade notify
Warning:
Please ensure the hosts are running compatible ESX versions for the upgrade. Refer to
corresponding
"Cisco Nexus 1000V and VMware Compatibility Information" guide.

switch# show vmware vem upgrade status

Upgrade VIBs: System VEM Image
Upgrade Status: Upgrade Availability Notified in vCenter
Upgrade Notification Sent Time: Mon Mar  6 08:49:55 2017
Upgrade Status Time(vCenter):
Upgrade Start Time:
Upgrade End Time(vCenter):
Upgrade Error:
Upgrade Bundle ID:
  VSM: VEM500-201703390101-BG
  DVS: VEM500-201612340101-BG

switch# show vmware vem upgrade status
Upgrade VIBs: System VEM Image
Upgrade Status: Upgrade Accepted by vCenter Admin
Upgrade Notification Sent Time: Mon Mar  6 08:49:55 2017
Upgrade Status Time(vCenter): Mon Mar  6 12:13:43 2017
Upgrade Start Time:
Upgrade End Time(vCenter):
Upgrade Error:
Upgrade Bundle ID:
  VSM: VEM500-201703390101-BG
  DVS: VEM500-201612340101-BG

switch#
switch# vmware vem upgrade proceed
switch# show vmware vem upgrade status

Upgrade VIBs: System VEM Image
Upgrade Status: Upgrade In Progress in vCenter
Upgrade Notification Sent Time: Mon Mar  6 08:49:55 2017
Upgrade Status Time(vCenter): Mon Mar  6 12:13:43 2017
Upgrade Start Time: Mon Mar  6 08:50:52 2017
Upgrade End Time(vCenter): Mon Mar  6 12:14:09 2017
Upgrade Error:
Upgrade Bundle ID:
  VSM: VEM500-201703390101-BG
  DVS: VEM500-201703390101-BG

switch# vmware vem upgrade complete
switch# show vmware vem upgrade status

Upgrade VIBs: System VEM Image
Upgrade Status:
Upgrade Notification Sent Time:
Upgrade Status Time(vCenter):
Upgrade Start Time:
Upgrade End Time(vCenter):
Upgrade Error:
Upgrade Bundle ID:

```

```
VSM: VEM500-201703390101-BG
DVS: VEM500-201703390101-BG
```

```
switch(config)# show module
show module
Mod  Ports  Module-Type                Model                Status
---  ---
1    0       Virtual Supervisor Module  Nexus1000V          active *
2    0       Virtual Supervisor Module  Nexus1000V          ha-standby
4    1022    Virtual Ethernet Module    NA                   ok
5    1022    Virtual Ethernet Module    NA                   ok
6    1022    Virtual Ethernet Module    NA                   ok
7    1022    Virtual Ethernet Module    NA                   ok

Mod  Sw                Hw
---  ---
1    5.2(1)SV3(3.1)    0.0
2    5.2(1)SV3(3.1)    0.0
4    5.2(1)SV3(3.1)    VMware ESXi 6.0.0 Releasebuild-3620759 (6.0)
5    5.2(1)SV3(3.1)    VMware ESXi 6.5.0 Releasebuild-4887370 (6.5)
6    5.2(1)SV3(3.1)    VMware ESXi 6.0.0 Releasebuild-3620759 (6.0)
7    5.2(1)SV3(3.1)    VMware ESXi 6.5.0 Releasebuild-4887370 (6.5)

Mod  Server-IP          Server-UUID           Server-Name
---  ---
1    10.197.132.57      NA                     NA
2    10.197.132.57      NA                     NA
4    10.197.132.43      e6c1a563-bc9e-11e0-bd1d-30e4dbc2baba 10.197.132.43
5    10.197.132.44      7b1a5e63-bcd0-11e0-bd1d-30e4dbc2c3ae 10.197.132.44
6    10.197.132.45      8d8ff0e8-b565-11e0-bd1d-30e4dbc297da 10.197.132.45
7    10.197.132.46      db8b80ac-af1d-11e0-a4e7-30e4dbc26b82 10.197.132.46
```

```
switch#
* this terminal session
```

Combined Upgrade of VMware vSphere and Cisco Nexus 1000V

You can perform a combined upgrade of VMware vSphere and Cisco Nexus 1000V.

If any of the hosts are running ESX 4.0 when the VSM is upgraded, the **installer** command displays that some VEMs are incompatible. You can proceed if you are planning a combined upgrade of the Cisco Nexus 1000V 4.2(1)SV1(4), 4.2(1)SV1(4a), 4.2(1)SV2(2.1), and ESX 4.0/4.1 to current release with ESX 5.0/5.1/5.5/6.0.



Note Starting with the 4.2(1)SV2(2.1) release, during an VSM upgrade, if you have incompatible hosts attached to the VSM you will be allowed to upgrade from the current release of Cisco Nexus 1000V software to the later releases. You will see a warning message on incompatible host when you upgrade. Ignore the warning message and continue with the upgrade and the VSM will be upgraded to the latest version. You can perform a combined upgrade on the incompatible hosts.



Note A combined upgrade is supported only for vCenter Server 5.0 Update 1 or later.

To perform a combined upgrade, follow the tasks documented in [Upgrading from VMware Releases 5.x to VMware Release 6.0](#)

Required Task After Upgrade—Changing the VEM Feature Level

After upgrading to Release 5.2(1)SV3(x), you must update the VEM feature level to the corresponding Release. After you perform this task, the new features in Release 5.2(1)SV3(x) are available on the Cisco Nexus 1000V and you have the option to increase the VLAN and port channel resource limits.

Before you begin

- VSM and VEM have been upgraded to Release 5.2(1)SV3(x).

Procedure

Step 1 switch# **configure terminal**

Enters global configuration mode.

Step 2 switch(config)# **show system vem feature level**

Displays the current VEM feature level. The current feature level should be 5.2(1)SV3(x).

Step 3 switch(config)# **system update vem feature level** *value*

Configures the VEM feature level.

Note When you run the **system update vem feature level** command after upgrading from Release 5.2(1)SV3(2.8) to Release 5.2(1)SV3(3.1), it displays the following three versions:

- 5.2(1)SV3(1.7)
- 5.2(1)SV3(1.10)
- 5.2(1)SV3(1.15)
- 5.2(1)SV3(2.1)
- 5.2(1)SV3(2.5)
- 5.2(1)SV3(2.8)
- 5.2(1)SV3(3.1)
- 5.2(1)SV3(3.15)
- 5.2(1)SV3(4.1)
- 5.2(1)SV3(4.1a)

You must select 5.2(1)SV3(4.1a) to update the VEM feature level to Release 5.2(1)SV3(4.1a) .

Step 4 switch(config)# **vdc** *switch-name*

Enters VDC configuration mode for the specified switch.

- Step 5** `switch(config-vdc)# limit-resource port-channel minimum value maximum value`
Configures the port channel resource limit.
- Step 6** `switch(config-vdc)# limit-resource vlan minimum value maximum value`
Configures the VLAN resource limit
- Step 7** `switch(config-vdc)# show resource`
Displays the updated values.
- Step 8** `switch(config-vdc)# exit`
Exists the current configuration mode.
- Step 9** (Optional) `switch(config)# copy running-config startup-config`
Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

Example

This example shows how to update the VEM feature level after upgrading to Release 5.2(1)SV3(x).

```
switch# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
switch(config)# system update vem feature ?
  level  Updating vem feature level

switch(config)# system update vem feature level ?
  <CR>
  <1-50>  Version number index from the list above

switch(config)# system update vem feature level
Feature          Version
Level           String
-----
1              4.2(1)SV2(2.1)
2              4.2(1)SV2(2.2)
3              4.2(1)SV2(2.3)
4              5.2(1)SV3(1.1)
5              5.2(1)SV3(1.2)
6              5.2(1)SV3(1.3)
7              5.2(1)SV3(1.4)
8              5.2(1)SV3(1.5)
9              5.2(1)SV3(1.6)
10             5.2(1)SV3(1.7)
11             5.2(1)SV3(1.10)
12             5.2(1)SV3(1.15)
13             5.2(1)SV3(2.1)
14             5.2(1)SV3(2.5)
15             5.2(1)SV3(2.8)
16             5.2(1)SV3(3.1)
17             5.2(1)SV3(3.15)
18             5.2(1)SV3(4.1)
19             5.2(1)SV3(4.1a)
switch(config)#
```

```
switch(config)# system update vem feature level 19
switch(config)# copy running-config startup-config
```

Simplified Upgrade Process

Combined Upgrade

You can upgrade the VEM and ESX version simultaneously. It requires vSphere version 5.0 Update1 and later versions. It is supported in Cisco Nexus 1000V Release 4.2(1)SV1(5.2) and later. This upgrade can be implemented manually or by using VUM.

Selective Upgrade

You can upgrade a selective set of VEMs and a few hosts or clusters at a time in a single maintenance window. This enables incremental upgrades during short maintenance windows. It is supported with combined upgrades of VEM and ESX, and also with manual upgrades of VEMs only. It is supported for VUM-based combined upgrades with select hosts or clusters using the GUI. It is not supported with VUM-based upgrades of VEMs alone. To upgrade manually using this procedure follow these general steps:

- Identify the cluster or set of hosts in a cluster.
- Place the selected hosts in maintenance mode (to vacate the VMs).
- Upgrade the VEM image on the hosts using the manual command or scripts.
- Take the hosts out of maintenance mode, allowing Distributed Resource Scheduler (DRS) to rebalance VMs.

Allowed Infrastructure Operations Under Selective Upgrade

These operations are allowed under selective upgrades:

- vMotion of VMs with the following releases:
 - pre-5.2(1)SV3(3.x) to 5.2(1)SV3(3.x)
 - 5.2(1)SV3(3.x) to pre-5.2(1)SV3(3.x)
 - 5.2(1)SV3(3.x) to 5.2(1)SV3(3.x)
 - pre5.2(1)SV3(3.x) to pre-5.2(1)SV3(3.x)
- VEM restart
- Host Reboot
- Add modules in 5.2(1)SV3(3.x)
- Add or remove ports vEth ports
- Shut or no-shut on port
- Migrate ports to or from vSwitch
- Add or delete VLAN or VLAN ranges

Background Upgrade

You can upgrade VEMs without a maintenance window for VEMs. You use the manual procedure to upgrade VEMs during production. Place the host in maintenance mode, upgrade the VEM, and remove the host from the maintenance mode. You do not have to shut off HA Admission Control and such (as you would during VUM upgrades). You must ensure the spare capacity in the cluster and perform a health check before the upgrade. To upgrade using this procedure follow these general steps:

- Upgrade the VSM first as usual. This may be done in a maintenance window
- Place one host at a time in maintenance mode (to vacate the VMs)
- Upgrade the VEM image on that host using manual commands or scripts
- Take the host out of maintenance mode, allowing the DRS to rebalance the VMs.
- Repeat the same procedure for every host in the DVS.



Note Make sure there is enough spare capacity for HA and that all required ports have system profiles (such as mgmt vmk). Check the host health before upgrading.

Extended Upgrade

You can modify configurations between the upgrade maintenance windows. VSM configuration changes are allowed where you can add or remove modules, port configurations, VLANs, and other similar changes. If a set of hosts are upgraded to the latest VEM version using the Selective Upgrade or the Background Upgrade, the remaining set of hosts will remain in older VEM versions. During that time, various Cisco Nexus 1000V configuration changes are allowed between maintenance windows.



Note Do not make configuration changes during a maintenance window when the VEMs are being upgraded.

The list of allowed configuration changes are as follows:

- Add or remove modules
- Add or remove ports (ETH and VETH)
- Shut or no-shut a port
- Migrate ports to or from a vswitch
- Change port modes (trunk or access) on ports
- Add or remove port profiles
- Modify port profiles to add or remove specific features such as VLANs, ACLs, QoS, or PortSec.
- Change port channel modes in uplink port profiles
- Add or delete VLANs and VLAN ranges
- Add or delete static MACs in VEMs



Note Queuing configuration changes are not supported on QoS.

Migrating from Layer 2 to Layer 3

Layer 3 Advantages

The following lists the advantages of using a Layer 3 configuration over a Layer 2 configuration:

- The VSM can control the VEMs that are in a different subnets.
- The VEMs can be in different subnets.
- Because the VEMs can be in different subnets, there is no constraint on the physical location of the hosts.
- Minimal VLAN configurations are required for establishing the VSM-VEM connection when compared to Layer 2 control mode. The IP address of the VEM (Layer 3 capable vmknic's IP address) and the VSM's control0/mgmt0 interface are the only required information.
- In the VSM, either the mgmt0 or the control0 interface can be used as the Layer 3 control interface. If mgmt0 is used, there is no need for another IP address as the VSM's management IP address is used for VSM-VEM Layer 3 connection.
- If the management VMKernel (vmk0) is used as the Layer 3 control interface in the VEM, there is no need for another IP address because the host's management IP address is used for VSM-VEM Layer 3 connectivity.



Note These advantages are applicable only for ESX-Visor hosts. On ESX-Cos hosts, a new VMKernel must be created.

Layer 2 to 3 Conversion Tool

About VSM-VEM Layer 2 to 3 Conversion Tool

Use the VSM-VEM Layer 2 to 3 Conversion Tool as an optional, simplified method to migrate from Layer 2 to Layer 3 mode. The tool enables you to do the following:

- Check whether the prerequisites are met for the migration from L2 to L3 mode.
- Migrate the VSM from Layer 2 to Layer 3 Mode, with user interaction.

In the process of migration, the tool creates a port profile. You can use port profiles to configure interfaces, which you can assign to other interfaces to give them the same configuration. The VSM-VEM Layer 2 to 3 Conversion Tool also gives you the option of retrieving the IP addresses from a local file (static).

Prerequisites for Using VSM-VEM Layer 2 to 3 Conversion Tool

The L2-L3_CT.zip file contains the applications required to run VSM-VEM Layer 2 to 3 Conversion Tool
Before you begin:

- Log in as administrator to use this conversion tool script.
- Download the L2-L3_CT.zip file from the [CCO Download Center](#).
- Install Tool Conversion Language (TCL) version 8.4 or later on the workstation.
- Install VMware PowerShell API version 5.0 or later on both the vCenter and the workstation.
- Install [OpenSSH](#) on the workstation.
- In the workstation environment variables, add `installation_directory_for_OpenSSH\bin` directory to the end of the Windows path variable.
- Ensure that VLANs are allowed on the uplinks.



Note You must install vCenter, VSM, and OpenSSH with admin privileges.

Using VSM-VEM Layer 2 to 3 Conversion Tool

Procedure

- Step 1** On your workstation, unzip the L2-L3_CT.zip file to any folder.
When you unzip the file, a Pre-Migrate-Check-Logs folder is created that holds all the running logs. Debugging log files will be created in this folder.
- Step 2** Inside the L2-L3_CT folder, run migration.bat as an administrator.
This starts the VSM-VEM Layer 2 to 3 Conversion Tool.
- Step 3** Enter the VSM IP address.
- Step 4** Enter the VSM username.
- Step 5** Enter the vCenter IP.
- Step 6** Enter the vCenter username.
- Step 7** Enter the VSM password.
- Step 8** Enter the vCenter password.
The migration tool begins creating the .csv file for the user, and then checks for a port profile with layer 3 capability.
- Step 9** If there is no layer 3-capable port profile, the tool will prompt for the creation of one. If you don't want to create a layer-3 capable port profile, skip to the next step.
- a) Enter **yes** to confirm when asked to create 1 layer 3-capable port profile.
 - b) Enter a layer 3 port profile name.
 - c) Enter access VLAN ID

This creates a port profile with the required configuration. You can select this port profile when prompted by the tool. The migration tool checks for connectivity between VSM, vCenter, and VEM modules. Wait for the message to display that all connectivity is fine.

- Step 10** Enter **yes** to continue when asked if you want to continue.
The migration tool proceeds to create an extract .csv file.
- Step 11** Open the extract.csv file (in C:\Windows\Temp).
- Step 12** Enter the vmknic IP details at the end of the text, delimited by semicolons, and save the file as convert.csv.
- Step 13** Press any key to continue.
- Step 14** Enter **yes** to confirm when asked if you are sure you completed the required steps.
- Step 15** Enter the VSM password.
- Step 16** Enter the vCenter password.
The migration tool connects to the vCenter and VSM of the user.
- Step 17** Enter **yes** to confirm when asked if you want to continue.
The migration process continues.
- Step 18** Enter the port profile name from the list of port profiles that appears at the prompt.
Once the port profile is selected, the max port value is automatically changed to 128.
- Step 19** Enter **yes** to confirm when asked if you have updated convert.csv file as per the instructions.
- Step 20** Enter **yes** to confirm, when asked if you want to continue.
The tool checks the connectivity between VSM, vCenter, and VEM modules. A message is displayed that the addition to vmknics are successful and all connectivity is fine. The **VmkNicAddingToHost** window will remain open until the configuration is complete.
- Step 21** Enter **yes** to confirm that you would like to proceed with mode change from L2 to L3.
- Step 22** Enter **yes** to confirm when asked if you wish to continue.
Wait for the SUCCESSFULLY COMPLETED MIGRATION message to display. The migration from layer 2 to layer 3 is now complete. The operating mode should now be listed as L3.

Using Extract Mode

You can use Extract Mode to extract the attached VEM states and save them to the Extract.csv file, which is located in C:\Windows\Temp.

Procedure

	Command or Action	Purpose
Step 1	Choose extract mode when prompted by VSM-VEM Layer 2 to 3 Conversion Tool. You can now view the data in the Extract.csv file in the Windows temp folder of your workstation.	This mode will not migrate the VSM.

Using Convert Mode

You can use Convert Mode to migrate the VSM from Layer 2 to Layer 3.

Procedure

	Command or Action	Purpose
Step 1	Rename the Extract.csv file to Convert.csv	The migration tool will retrieve the data from the Convert.csv file.
Step 2	Populate your Convert.csv file (in C:\Windows\Temp) with the vmknic IP address and netmask.	
Step 3	Run migration.bat.	This will migrate the VSM mode from Layer 2 to Layer 3 .

Example

The following example shows how to use the VSM-VEM Layer 2 to 3 Conversion Tool.

```

Enter VSM IP:
enter VSM Username:
Enter VC IP:
enter VC Username:
Enter VSM password:
Enter VC password:
create the Csv File for User I/P: C:\windows\temp\extract.csv
#### VSM DETAILS STARTS #####
.....
.....
#### VC DETAILS END #####
.....
.....
Operating Mode : L2
Operatoinal Mode is L2 Currently .....
#####
List of port profiles on VSM:
-----
#####
=====
CHECK 1: Checking for a port profile with capability l3control set and Enabled.
.....
=====
There is not even One L3 Capable Port Profile

Do you want to Create One L3 Capable Port Profile
Please Give Option (Yes/No):Yes
Please Enter L3 PortProfile Name: L3-Control
Please Give Access Vlan Id :5
Creating L3 Port Profile : L3-Control with Access Vlan : 5
.....
.....
L3 capable port profiles: L3-Control
Modules Registered:[10.105.228.116]
=====
CHECK 3: Checking for connectivity between VSM and VC, VSM and VEM Modules
=====
.....

```

```

.....

## All connectivity is fine
#####
Please wait for a few minutes.
Do you want to Continue,Please Type ....(yes/no):yes
Migration Tool Proceeding ....
Creating csv file: C:\windows\temp\extract.csv
Modules : 10.105.228.116
#####
Modules Registered:[3 10.105.228.116]
#####

#####
#####
Extraction of VEM connection status has been dumped in: C:\windows\temp\extract.
csv
Please rename this file before using Convert Mode
Update the VMKNic IP and NetMask for all disconnected entries
#####
!#####
#####!
!Open c:\windows\temp\Extract.csv and save as Convert.csv (in the same directory
)
!Enter the VMKNic IP and netmask in the Convert.csv file as shown below
!VEM_Host_IP;PPConnectionStatus;Vem_Vmk_IP;NetMask!
!PPConnectionStatus Should not be changed!
!10.10.10.12;DisConnected;10.10.10.100;255.255.255.0!
!After Updating the IP and Netmask, save the file in the same directory
!#####
#####!
Press any key to continue . . .
Are you sure you completed the above steps? (yes/no):yes

#####

##Tool expects this File have an IP/Netmask given for disconnected VEM in the co
rrect format : C:\windows\temp\Convert.csv

##10.10.10.12;DisConnected;10.10.10.100;255.255.255.0

#####
VSM password required 10.105.228.115:

VC password required 10.105.228.113:

create the Csv File for User I/P: C:\windows\temp\extract.csv
.....
.....
## All connectivity is fine

#####
Please wait for a few minutes.
Do you want to Continue,Please Type ....(yes/no):yes
Migration Tool Proceeding ....
.....
.....
#####
Name the port profile you want to proceed with : [l3-pp]
Please type any port profile mentioned above      ||:l3-pp
You Selected : l3-pp
.....
.....
#####

```

```

## Have you created a Convert.csv file with a proper VMKNic IP and NetMask?
## In the C:\windows\temp\Convert.csv file for disconnected VEMs.
#####
Have you Updated C:\windows\temp\Convert.csv as per the above instructions?(Yes)
:yes
Do you want to Continue,Please Type ....(yes/no):yes
Migration Tool Proceeding ....
.....
.....

Addition to VmKNics are successful
## All connectivity is Fine
.....
.....
#####

Would You Like to Proceed with Mode Change from L2 to L3...(yes/no):yes
Do you want to Continue,Please Type ....(yes/no):yes
Migration Tool Proceeding ....
.....
.....

switch#
Operating Mode : L3
Operatoinal Mode is L3 Currently
Svs Connection Mode : L3
Vem IP : 10.10.10.108 Connected Back
.....
.....
All VEMs are back: pass
=====SUCCESSFULLY COMPLETED MIGRATION=====

```

Interface Comparisons Between mgmt0 and control0

The following describes the differences between using a mgmt0 interface or a control0 interface:

- On the VSM, there are two ways of connectivity via the mgmt0 or control0 interface.
- Setting mgmt0 as Layer 3 interface uses the mgmt0 interface on the VSM.
- The control0 interface is a special interface created for Layer 3 connectivity.
- The Layer 3 interface on the VEM is selected by designating the interface with the Layer 3 control capability.
- The egress control traffic route is decided by the VMware routing stack.
- On a VEM, the management vmknic (vmk0) can be used for Layer 3 control connectivity if it is managed by the Cisco Nexus 1000V and is designated with the Layer 3 control capability.

Configuring the Layer 3 Interface

Configure either the control0 (see Step 1) or mgmt0 interface (see Step 2).

Procedure

-
- Step 1** Configuring the control0 interface.

Note When using control0 as the control interface on the VSM, the control0 interface must be assigned with an IP address.

a) Configure the IP address.

```
switch# configure terminal
switch(config)# interface control 0
switch(config-if)# ip address 5.5.5.2 255.255.255.0
```

b) Display the running configuration of the control0 interface.

```
switch# show running-config interface control 0
!Command: show running-config interface control0
!Time: Mon DEC 02 02:41:47 2015
version 5.2(1)SV3(3.1)
interface control0
  ip address 5.5.5.2/24
```

Step 2 Configure the mgmt0 interface.

Note When using mgmt0 as the control interface, no configuration on the VSM is required as the mgmt0 interface is assigned with the host's management IP address.

a) Display the running configuration of the mgmt0 interface.

```
switch# show running-config interface mgmt 0
!Command: show running-config interface mgmt0
!Time: Mon DEC 02 02:43:25 2015
version 5.2(1)SV3(3.1)
interface mgmt0
  ip address 10.104.249.37/27
```

Creating a Port Profile with Layer 3 Control Capability

Before you begin

- You are creating a port profile with Layer 3 control capability.
- Allow the VLAN that you use for VSM to VEM connectivity in this port profile.
- Configure the VLAN as a system VLAN.



Note VEM modules will not register to the VSM before a vmkernel interface (vmk) is migrated to a Layer 3 control capable port profile. You must migrate a vmk to the Layer 3 port profile after migrating host vmnics to Ethernet port profiles. Migrate your management vmkernel interface into the Layer 3 capable port profile. Do not use multiple vmkernel interfaces on the same subnet.

Procedure

Step 1 Create a Layer 3 port profile.

```
VSM_1# configure terminal
VSM_1(config)# port-profile type vethernet l3_control
VSM_1(config-port-prof)# switchport mode access
VSM_1(config-port-prof)# switchport access vlan 3160
VSM_1(config-port-prof)# capability l3control
VSM_1(config-port-prof)# vmware port-group
VSM_1(config-port-prof)# state enabled
VSM_1(config-port-prof)# no shutdown
```

Step 2 Display the port profile.

```
VSM_1# show port-profile name l3_control
port-profile l3_control
  type: Vethernet
  description:
  status: enabled
  max-ports: 32
  min-ports: 1
  inherit:
  config attributes:
    switchport mode access
    switchport access vlan 3160 (Allow the VLAN in access mode.)
    no shutdown
  evaluated config attributes:
    switchport mode access
    switchport access vlan 3160
    no shutdown
  assigned interfaces:
    Vethernet1
  port-group: l3_control
  system vlans: 3160 (Configure the VLAN as a system VLAN.)
  capability l3control: yes (Configure capability l3 control.)
  capability iscsi-multipath: no
  capability vxlan: no
  capability l3-vn-service: no
  port-profile role: none port-binding: static
```

Creating a VMKernel on the Host

Procedure

- Step 1** Log in to the vCenter Server.
- Step 2** Choose **Home > Inventory > Hosts and Clusters**.
- Step 3** Choose the host.
- Step 4** Click the **Configuration** tab.
- Step 5** In the Hardware pane, choose **Networking**.
- Step 6** Click the **vSphere Distributed Switch** button.
- Step 7** Go to **Manage Virtual Adapters**.

Step 8 Add and create a new VMKernel.

Note The management vmkernel can also be used as a Layer 3 control interface. For ESX-Visor hosts only. Migrate your management vmkernel interface into the Layer 3 capable port profile. Do not use multiple vmkernel interfaces on the same subnet.

Step 9 Assign the VMkernel to the port profile created in [Creating a Port Profile with Layer 3 Control Capability, on page 48](#).

Step 10 Assign an IP address.

Configuring the SVS Domain in the VSM

Before you begin

The control0 or mgmt0 interface can be assigned as the Layer 3 control interface.

Procedure

Step 1 Disconnect the VSM to vCenter Server connection.

```
switch# configure terminal
switch(config)# svs connection toVC
switch(config-svs-conn)# no connect
switch(config-svs-conn)# exit
```

Step 2 (Optional) Remove the control and the packet VLAN configuration.

```
switch(config)# svs-domain
switch(config-svs-domain)# no control vlan
switch(config-svs-domain)# no packet vlan
```

Step 3 Change the svs mode from Layer 2 to Layer 3 with the mgmt0 interface as the Layer 3 control interface.

```
switch(config-svs-domain)# svs mode l3 interface mgmt0
switch(config-svs-domain)# exit
```

Note If the control0 interface is being used as the Layer 3 control interface, enter the **svs mode l3 interface control0** command:

Step 4 Restore the VSM to vCenter Server connection.

```
switch(config)# svs connection toVC
switch(config-svs-conn)# connect
switch(config-svs-conn)# end
```

Note After entering the **svs connection toVC** command, the module is detached and reattached in Layer 3 mode. If this delay is more than six seconds, a module flap occurs. This does not affect the data traffic.

Step 5 Display the SVS domain configuration.

```
switch# show svs domain
SVS domain config:
  Domain id:    3185
  Control vlan: NA
  Packet vlan:  NA
  L2/L3 Control mode: L3
  L3 control interface: mgmt0
  Status: Config push to VC successful.
```

Note: Control VLAN and Packet VLAN are not used in L3 mode.
