



## **Cisco UCS Manager VM-FEX for VMware GUI Configuration Guide, Release 2.2**

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## Preface

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## Audience

This guide is intended primarily for data center administrators with responsibilities and expertise in one or more of the following:

- Server administration
- Storage administration
- Network administration
- Network security

## Conventions

Text Type	Indication
GUI elements	GUI elements such as tab titles, area names, and field labels appear in <b>this font</b> . Main titles such as window, dialog box, and wizard titles appear in <b>this font</b> .
Document titles	Document titles appear in <i>this font</i> .
TUI elements	In a Text-based User Interface, text the system displays appears in <i>this font</i> .
System output	Terminal sessions and information that the system displays appear in <i>this font</i> .

Text Type	Indication
CLI commands	CLI command keywords appear in <b>this font</b> . Variables in a CLI command appear in <i>this font</i> .
[ ]	Elements in square brackets are optional.
{x   y   z}	Required alternative keywords are grouped in braces and separated by vertical bars.
[x   y   z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
< >	Nonprinting characters such as passwords are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

**Note**

Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the document.

**Tip**

Means *the following information will help you solve a problem*. The tips information might not be troubleshooting or even an action, but could be useful information, similar to a Timesaver.

**Caution**

Means *reader be careful*. In this situation, you might perform an action that could result in equipment damage or loss of data.

**Timesaver**

Means *the described action saves time*. You can save time by performing the action described in the paragraph.

**Warning****IMPORTANT SAFETY INSTRUCTIONS**

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

SAVE THESE INSTRUCTIONS

## Related Documentation

### UCS Documentation Roadmaps

For a complete list of all B-Series documentation, see the *Cisco UCS B-Series Servers Documentation Roadmap* available at the following URL: <http://www.cisco.com/go/unifiedcomputing/b-series-doc>.

For a complete list of all C-Series documentation, see the *Cisco UCS C-Series Servers Documentation Roadmap* available at the following URL: <http://www.cisco.com/go/unifiedcomputing/c-series-doc>.

### VM-FEX for VMware Documentation

The following documentation is available for Cisco Virtual Machine Fabric Extender (VM-FEX) for VMware:

- Roadmap that lists all documentation for Cisco Unified Computing System (Cisco UCS) at the following URL: <http://www.cisco.com/go/unifiedcomputing/b-series-doc>
- The Unify Virtual and Physical Networking with Cisco Virtual Interface Card White Paper
- The Cisco Unified Computing System with Cisco VM-FEX and VMware VMDirectPath2 Deployment Guide

### Other Documentation Resources

An ISO file containing all B and C-Series documents is available at the following URL: <http://www.cisco.com/cisco/software/type.html?mdfid=283853163&flowid=25821>. From this page, click **Unified Computing System (UCS) Documentation Roadmap Bundle**.

The ISO file is updated after every major documentation release.

Follow [Cisco UCS Docs on Twitter](#) to receive document update notifications.

## Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly [What's New in Cisco Product Documentation](#), which also lists all new and revised Cisco technical documentation.

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.

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# Introduction

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This chapter includes the following sections:

- [Overview of Virtualization, page 1](#)
- [Overview of Cisco Virtual Machine Fabric Extender, page 1](#)
- [Virtualization with a Virtual Interface Card Adapter, page 2](#)
- [Virtualization with Network Interface Cards and Converged Network Adapters, page 2](#)
- [VM-FEX for VMware Components and Requirements, page 3](#)
- [Modes of Operation, page 7](#)
- [Configuring VM-FEX for VMware, page 8](#)

## Overview of Virtualization

Virtualization allows you to create multiple Virtual Machines (VMs) to run in isolation, side by side on the same physical machine.

Each virtual machine has its own set of virtual hardware (RAM, CPU, NIC) upon which an operating system and fully configured applications are loaded. The operating system sees a consistent, normalized set of hardware regardless of the actual physical hardware components.

In a virtual machine, both hardware and software are encapsulated in a single file for rapid provisioning and moving between physical servers. You can move a virtual machine, within seconds, from one physical server to another for zero-downtime maintenance and continuous workload consolidation.

The virtual hardware makes it possible for many servers, each running in an independent virtual machine, to run on a single physical server. The advantages of virtualization include better use of computing resources, greater server density, and seamless server migration.

## Overview of Cisco Virtual Machine Fabric Extender

A virtualized server implementation consists of one or more VMs that run as guests on a single physical server. The guest VMs are hosted and managed by a software layer called the hypervisor or virtual machine manager

(VMM). Typically, the hypervisor presents a virtual network interface to each VM and performs Layer 2 switching of traffic from a VM to other local VMs or to another interface to the external network.

Working with a Cisco virtual interface card (VIC) adapter, the Cisco Virtual Machine Fabric Extender (VM-FEX) bypasses software-based switching of VM traffic by the hypervisor for external hardware-based switching in the fabric interconnect. This method reduces the load on the server CPU, provides faster switching, and enables you to apply a rich set of network management features to local and remote traffic.

VM-FEX extends the IEEE 802.1Qbh port extender architecture to the VMs by providing each VM interface with a virtual Peripheral Component Interconnect Express (PCIe) device and a virtual port on a switch. This solution allows precise rate limiting and quality of service (QoS) guarantees on the VM interface.

## Virtualization with a Virtual Interface Card Adapter

A Cisco VIC adapter is a converged network adapter (CNA) that is designed for both bare metal and VM-based deployments. The VIC adapter supports static or dynamic virtualized interfaces, which includes up to 128 virtual network interface cards (vNICs).

There are two types of vNICs used with the VIC adapter—static and dynamic. A static vNIC is a device that is visible to the OS or hypervisor. Dynamic vNICs are used for VM-FEX by which a VM is connected to a veth port on the Fabric Interconnect.

VIC adapters support VM-FEX to provide hardware-based switching of traffic to and from virtual machine interfaces.

**Note**

All models of the Cisco VICs, including **gen2**, support VM-FEX in the high performance mode as long as you are running ESXi 5.0 or higher on the hypervisor host.

In a VMware environment, VM-FEX supports the standard VMware integration with VMware ESX hypervisors installed on the server and all virtual machine management performed through the VMware vCenter.

## Virtualization with Network Interface Cards and Converged Network Adapters

Network interface card (NIC) and converged network adapters support virtualized environments with the standard VMware integration with ESX installed on the server and all virtual machine management performed through the VC.

### Portability of Virtual Machines

If you implement service profiles you retain the ability to easily move a server identity from one server to another. After you image the new server, the ESX treats that server as if it were the original.

### Communication between Virtual Machines on the Same Server

These adapters implement the standard communications between virtual machines on the same server. If an ESX host includes multiple virtual machines, all communications must go through the virtual switch on the server.

If the system uses the native VMware drivers, the virtual switch is out of the network administrator's domain and is not subject to any network policies. As a result, for example, QoS policies on the network are not applied to any data packets traveling from VM1 to VM2 through the virtual switch.

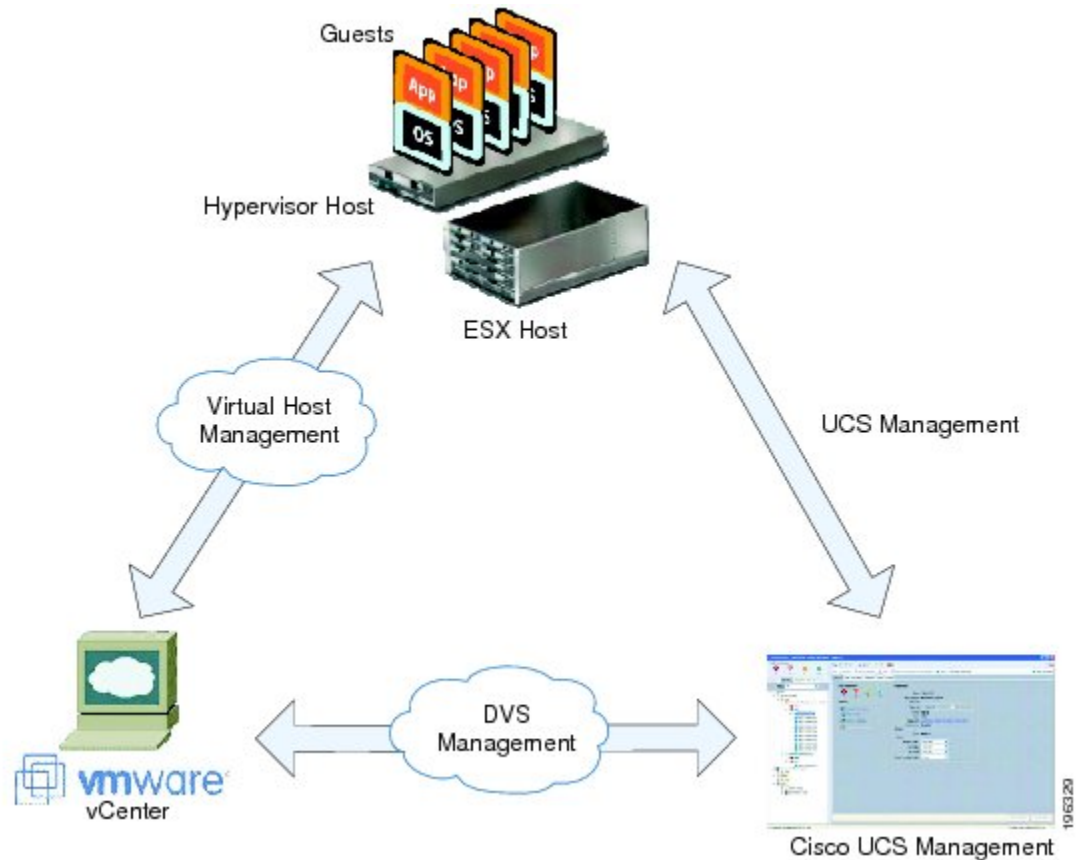
If the system includes another virtual switch, such as the Nexus 1000, that virtual switch is subject to the network policies configured on that switch by the network administrator.

## VM-FEX for VMware Components and Requirements

At a high level, VM-FEX for VMware requires a hypervisor host, Cisco UCS Manager, and VMware vCenter virtualization management software.

The following figure shows these three main components and the methods by which they are connected.

**Figure 1: Component Connectivity for VM-FEX with VMware**



These components must be configured correctly for VM-FEX for VMware to work.

## Hypervisor Host

The hypervisor host has these requirements:

- You must install a Cisco UCS Virtual Interface Card in the server you intend to use as the hypervisor host. For more information about installing Cisco UCS Virtual Interface Cards, see the *Cisco UCS 5108 Server Chassis Hardware Installation Guide*.
- You must install the correct version of VMware ESX or ESXi software on the Cisco UCS Manager host. For VM-FEX in standard mode, you must install VMware ESX version 4.0, Update 1 software or later versions.
- You must obtain the Cisco VM-FEX Driver software bundle from the Cisco **Download Software** page:
  - For B-Series from, <http://software.cisco.com/download/navigator.html>. Select **Downloads Home > Products > Servers - Unified Computing > Cisco UCS B-Series Blade Server Software** and click **Unified Computing Systems (UCS) Drivers**. From this page, click **Latest Releases** or **All Releases** to select the release you want, and click **Download** to download the **ISO image of UCS-related drivers**.
  - For C-Series from, <http://software.cisco.com/download/navigator.html>. Select **Downloads Home > Products > Servers - Unified Computing > Cisco UCS C-Series Rack-Mount UCS-Managed Server Software** and click **Unified Computing Systems (UCS) Drivers**. From this page, click **Latest Releases** or **All Releases** to select the release you want, and click **Download** to download the **ISO image of UCS-related drivers**.
- You must install the correct version of the Cisco VM-FEX Driver software bundle on the hypervisor host. The Cisco VM-FEX Driver software bundle that you install depends on the VMware ESX or ESXi version you have installed on the hypervisor host. For information about the compatible versions of VMware ESX software and Cisco VM-FEX Driver software bundles, see VM-FEX Software Interoperability Matrix in *Hardware and Software Interoperability Matrix for B Series Servers* at [http://www.cisco.com/en/US/products/ps10477/prod\\_technical\\_reference\\_list.html](http://www.cisco.com/en/US/products/ps10477/prod_technical_reference_list.html).




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**Note** The VEM software bundle is also a component of another product: the Cisco Nexus 1000V switch. Do not be concerned if you see references to this product during the installation of the VEM bundle. This reference is cosmetic only and does not affect the outcome of the installation and implementation of VM-FEX.

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## Cisco UCS Manager

### VM-FEX for VMware-Related Policies

You must modify or create several policies in order for VM-FEX for VMware to function optimally:

- VMwarePassThrough Ethernet Adapter Policy (high-performance mode only)
- Dynamic vNIC Connection Policies
- BIOS Policy (high-performance mode only)
- VM Lifecycle Policy

## Extension File for Communicating with VMware vCenter

For Cisco UCS domains that use VIC adapters to implement VM-FEX, you must create and install an extension file to establish the relationship and communications between Cisco UCS Manager and VMware vCenter. This extension file is an XML file that contains an extension key and public secure sockets layer (SSL) certificate.



### Important

You cannot change an extension key that is being used by a DVS or an external virtualization manager. If you want to use a custom extension key, we recommend that you create and register the custom key before you create the DVS in Cisco UCS Manager to avoid any possibility of having to delete and recreate the associated DVS.

## Extension Key

Cisco UCS and VMware vCenter must be connected for management integration and network communication with the host. To accomplish this connectivity, Cisco UCS provides an extension key that represents the Cisco UCS identity. The extension key must be registered with the external virtualization manager before the Cisco UCS domain can be acknowledged and management and network connectivity can be established.

## SSL Certificate

Cisco UCS Manager generates a default, self-signed SSL certificate to support communication with a VMware vCenter. You can also create your own custom certificate to communicate with multiple VMware vCenters. When you create a custom certificate, Cisco UCS Manager recreates the extension files to include the new certificate. If you subsequently delete the custom certificate, Cisco UCS Manager recreates the extension files to include the default, self-signed SSL certificate.

To create a custom certificate, you must obtain and copy an external certificate into Cisco UCS and then create a certificate for VM-FEX that uses the certificate you copied into Cisco UCS.

## Distributed Virtual Switches (DVSes)

The Cisco UCS distributed virtual switch (DVS) is a software-based virtual switch that runs along side the vSwitch in the ESX hypervisor and can be distributed across multiple ESX hosts. Unlike the vSwitch, which uses its own local port configuration, a DVS that is associated with multiple ESX hosts uses the same port configuration across all ESX hosts.

After associating an ESX host to a DVS, you can migrate existing VMs from the vSwitch to the DVS, and you can create VMs to use the DVS instead of the vSwitch. With the VM-FEX for VMware implementation, when a VM uses the DVS, all VM traffic passes through the DVS and ASIC-based switching is performed by the fabric interconnect.

## Port Profiles

Port profiles contain the properties and settings that you can use to configure virtual interfaces in Cisco UCS for VM-FEX. The port profiles are created and administered in Cisco UCS Manager. After a port profile is created, assigned to, and actively used by one or more DVSes, any changes made to the networking properties of the port profile in Cisco UCS Manager are immediately applied to those DVSes.

In VMware vCenter, a port profile is represented as a port group. Cisco UCS Manager pushes the port profile names to VMware vCenter, which displays the names as port groups. None of the specific networking properties or settings in the port profile are visible in VMware vCenter. You must configure at least one port profile client for a port profile if you want Cisco UCS Manager to push the port profile to VMware vCenter.

### Port Profile Clients

The port profile client determines the DVSEs to which a port profile is applied. By default, the port profile client specifies that the associated port profile applies to all DVSEs in the VMware vCenter. However, you can configure the client to apply the port profile to all DVSEs in a specific datacenter or datacenter folder or only to one DVS.

## VMware vCenter

You need VMware vCenter (vCenter Server and vSphere Client) for VM-FEX for VMware. The VMware vCenter must meet the following requirements:

- The Windows-based machine that you install VMware vCenter on must have network connectivity to the Cisco UCS management port and to the uplink Ethernet port(s) being used by the ESX host. The management port connectivity is used for management plane integration between VMware vCenter and Cisco UCS Manager; the uplink Ethernet port connectivity is used for communication between VMware vCenter and the ESX host.



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**Note** The HTTP and HTTPS ports (normally TCP 80 and 443) must not be blocked between vCenter and the Cisco UCS domain.

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- A VMware vCenter extension key provided by Cisco UCS Manager must be registered with VMware vCenter before VMware vCenter acknowledges the Cisco UCS domain.



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**Note** VMware vCenter Server Appliance (VCSA) is not supported.

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In addition, you must configure VMware vCenter with the following parameters:

- A datacenter.
- A distributed virtual switch (DVS).
- ESX hosts added to the DVS and configured to migrate to pass-through switching PTS/DVS.
- For each Cisco VIC adapter, two static vNICs (one for each fabric) added to the DVS.
- Virtual machines (VMs) required for the VMs on the server.
- (For VMware vMotion) Hosts with common shared storage (datastore) that are properly configured for vMotion.
- (For VM-FEX in high-performance mode) All guest memory on the VMs must be reserved.
- (For VM-FEX in high-performance mode) The port profiles and VMwarePassThrough Ethernet adapter policy that you have previously configured in Cisco UCS Manager must be specified.

For information about how to configure these required components in VMware vCenter, see the VMware product documentation.

# Modes of Operation

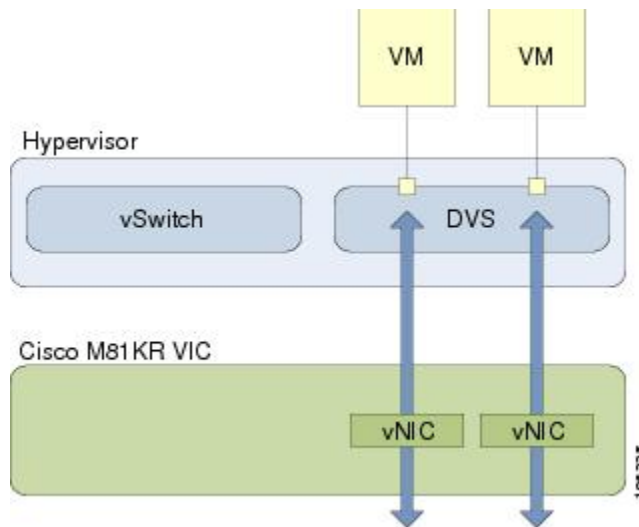
VM-FEX ports can operate in standard mode or high-performance mode.

## Standard Mode

In standard mode, traffic to and from a virtual machine passes through the distributed virtual switch (DVS) and the hypervisor.

The following figure shows the traffic paths taken by VM traffic on a Cisco UCS server with a VIC adapter that has VM-FEX ports in standard mode.

**Figure 2: Traffic Paths for VM Traffic with VM-FEX**



## High-Performance Mode

In high-performance mode, traffic to and from a virtual machine (VM) bypasses the DVS and hypervisor. Traffic travels directly between VMs and the virtual interface card (VIC) adapter.

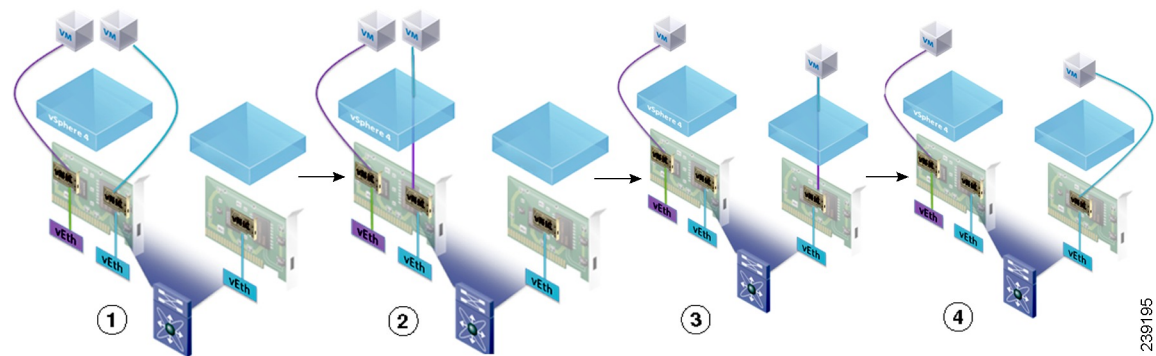
The benefits of high-performance mode are as follows:

- Increases I/O performance and throughput.
- Decreases I/O latency.
- Improves CPU utilization for virtualized I/O-intensive applications.

With VMware, high-performance mode also supports vMotion. During vMotion, the hypervisor reconfigures links in high-performance mode to be in standard mode, transitions the link to the new hypervisor, and then

reconfigures the link to be in high-performance mode. The following figure shows how VM-FEX operates in high-performance mode with vMotion.

**Figure 3: VM-FEX in High-Performance Mode with vMotion**



- 1 Two VMs are attached to a VIC in high-performance mode.
- 2 VMotion begins on one VM. This VM transitions to standard mode.
- 3 The VM migrates to the other host, and standard mode is established.
- 4 The VM transitions back to high-performance mode.

## Configuring VM-FEX for VMware

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	Configure a Service Profile for VM-FEX for VMware.	<p>You must modify or create several policies in order for VM-FEX for VMware to function optimally:</p> <ul style="list-style-type: none"> <li>• VMwarePassThrough Ethernet Adapter Policy (high-performance mode only)</li> <li>• Dynamic vNIC Connection Policies</li> <li>• BIOS Policy (high-performance mode only)</li> <li>• VM Lifecycle Policy</li> </ul> <p>For more information, see <a href="#">Configuring a Service Profile with VM-FEX</a>, on page 11.</p>
<b>Step 2</b>	Configure the installation of the Cisco VM-FEX Driver software bundle on the hypervisor host.	<p>You must configure the VMware ESX host and install the Cisco VM-FEX Driver software bundle and a VMware vCenter for VM-FEX. For more information, see <a href="#">Installing the Cisco VM-FEX Driver Software Bundle</a> and the VMware documentation.</p>

	Command or Action	Purpose
<b>Step 3</b>	(Optional) In Cisco UCS Manager, use the VMware Integration wizard to connect Cisco UCS Manager to VMware vCenter, define a distributed virtual switch, define port profiles, and apply this configuration to VMware vCenter.	For simple implementations, you can use the wizard to perform these steps, or for more complex implementations, use the information provided in steps 4 through 6 in this procedure. <b>Note</b> The wizard does not address every VMware vCenter configuration. For more information, see <a href="#">Using the Configure VMware Integration Wizard</a> , on page 31.
<b>Step 4</b>	Connect Cisco UCS Manager to VMware vCenter.	You must connect Cisco UCS Manager with VMware vCenter to manage the distributed virtual switch (DVS) in Cisco UCS Manager. For more information, see <a href="#">Connecting Cisco UCS Manager to VMware vCenter</a> , on page 39.
<b>Step 5</b>	In Cisco UCS Manager, define a distributed virtual switch.	You must create a distributed virtual switch (DVS) to use in place of the VMware vSwitch. For more information, see <a href="#">Configuring Distributed Virtual Switches in Cisco UCS</a> , on page 45.
<b>Step 6</b>	In Cisco UCS Manager, define a port profile and (optionally) create a port profile client.	You must create a port profile to define the properties and settings used to configure the virtual interfaces in the DVS. Optionally, you can also create a port profile client that defines the DVSEs to which port profiles are assigned. For more information, see <a href="#">Configuring Port Profiles</a> , on page 57.





## Configuring a Service Profile with VM-FEX

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This chapter includes the following sections:

- [Modifying the VMwarePassThrough Ethernet Adapter Policy, page 11](#)
- [Configuring Dynamic vNIC Connection Policies, page 12](#)
- [Configuring the VM Lifecycle Policy, page 16](#)
- [Creating a BIOS Policy for VM-FEX in High-Performance Mode, page 17](#)

### Modifying the VMwarePassThrough Ethernet Adapter Policy

VM-FEX in high-performance mode has a system-provided VMwarePassThrough adapter policy. Most of the default settings are sufficient. However, you might need different settings than this policy provides to accommodate your particular implementation. If you need different settings, we recommend that you create another Ethernet adapter policy with your specific settings. In particular, you might want to check the following settings to make sure that they work with your particular implementation:

- Guest OS requirements
  - Transmit queue
  - Receive queue
  - Completion queues
  - Interrupts
- Maximum number of interfaces per host.
- Maximum number of interfaces in pass-through mode per host.

For more information about configuring an Ethernet adapter policy, see the *Cisco UCS Manager GUI Configuration Guide*.

**Note**

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If you have VMs with two or more vCPUS and you have upgraded from earlier versions of VM-FEX for VMware to release 2.1, you need to manually modify the following parameters with the specified values:

- wq—Set this parameter to 4.
  - comp-queues—Set this parameter to 8.
  - interrupts—Set this parameter to 12.
- 

## Configuring Dynamic vNIC Connection Policies

### Dynamic vNIC Connection Policy

The dynamic vNIC connection policy determines how the connectivity between VMs and dynamic vNICs is configured. This policy is required for Cisco UCS domains that include servers with VIC adapters on which you have installed VMs and configured dynamic vNICs.

**Note**

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Do not configure dynamic vNICs in a non-VM-FEX environment. If you configure dynamic vNICs in a service profile in a non-VM-FEX environment, the ESX OS installation may lead to a purple screen of death (PSOD).

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#### Ethernet Adapter Policy

Each dynamic vNIC connection policy includes an Ethernet adapter policy and designates the number of vNICs that can be configured for any server associated with a service profile that includes the policy.

For VM-FEX that has all ports on a blade in standard mode, you need to use the VMware adapter policy.

For VM-FEX that has at least one port on a blade in high-performance mode, use the VMwarePassThrough adapter policy or create a custom policy. If you need to create a custom policy, the resources provisioned need to equal the resource requirements of the guest OS that needs the most resources and for which you will be using high-performance mode.

#### Static vNICs

**Note**

---

In a VM-FEX deployment, a VM will attach to a dynamic vNIC without any redundancy. If a server contains more than one VIC adapter, each adapter must have two static vNICs configured.

---

### Server Migration



**Note** If you migrate a server that is configured with dynamic vNICs using VMotion, the dynamic interface used by the vNICs fails and notifies you of that failure.

When the server comes back up, assigns new dynamic vNICs to the server. If you are monitoring traffic on the dynamic vNIC, you must reconfigure the monitoring source.

## Creating a Dynamic vNIC Connection Policy

### Procedure

- Step 1** In the **Navigation** pane, click the **LAN** tab.
- Step 2** On the **LAN** tab, expand **LAN > Policies**.
- Step 3** Expand the node for the organization where you want to create the policy. If the system does not include multitenancy, expand the **root** node.
- Step 4** Right-click the **Dynamic vNIC Connection Policies** node and choose **Create Dynamic vNIC Connection Policy**.
- Step 5** In the **Create Dynamic vNIC Connection Policy** dialog box, complete the following fields:

Name	Description
Name field	<p>The name of the policy.</p> <p>This name can be between 1 and 16 alphanumeric characters. You cannot use spaces or any special characters other than - (hyphen), _ (underscore), : (colon), and . (period), and you cannot change this name after the object is saved.</p> <p><b>Note</b> Do not specify "default" as the value for the dynamic vNIC connection policy name. Cisco UCS Manager automatically resolves any empty policy references to "default". Any service profiles or service profile templates with only static vNICs defined will automatically reference the policy "default" when it is present. If you specify "default" for the dynamic vNIC connection policy name, then unexpected dynamic vNICs might be created on those service profiles or service profile templates.</p>
Description field	<p>A description of the policy. Cisco recommends including information about where and when to use the policy.</p> <p>Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), &gt; (greater than), &lt; (less than), or ' (single quote).</p>

Name	Description
Number of Dynamic vNICs field	<p>The number of dynamic vNICs that this policy affects.</p> <p>Enter an integer between 0 and 256. The default is 54.</p> <p><b>Note</b> Components of your system might limit this number to fewer than 256 vNICs.</p>
Adapter Policy drop-down list	<p>The adapter profile associated with this policy. The profile must already exist to be included in the drop-down list.</p>
Protection field	<p>Dynamic vNICs are always protected in Cisco UCS, but this field allows you to select a preferred fabric, if any. You can choose one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Protected Pref A</b>—Cisco UCS attempts to use fabric A but fails over to fabric B if necessary</li> <li>• <b>Protected Pref B</b>—Cisco UCS attempts to use fabric B but fails over to fabric A if necessary</li> <li>• <b>Protected</b>—Cisco UCS uses whichever fabric is available</li> </ul>

**Step 6** Click **OK**.

**Step 7** If a confirmation dialog box appears, click **Yes**.

## Changing a Dynamic vNIC Connection Policy

### Procedure

**Step 1** In the **Navigation** pane, click the **LAN** tab.

**Step 2** On the **LAN** tab, expand **LAN > Policies**.

**Step 3** Expand the node for the organization that contains the policy that you want to change.  
If the system does not include multitenancy, expand the **root** node.

**Step 4** Expand the **Dynamic vNIC Connection Policies** node and click the policy that you want to change.

**Step 5** In the **Work** pane, click the **General** tab.

**Step 6** Change one or more of the following fields:

Name	Description
<b>Description</b> field	<p>A description of the policy. Cisco recommends including information about where and when to use the policy.</p> <p>Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), &gt; (greater than), &lt; (less than), or ' (single quote).</p>
<b>Number of Dynamic vNICs</b> field	<p>The number of dynamic vNICs that this policy affects.</p> <p>Enter an integer between 0 and 256. The default is 54.</p> <p><b>Note</b> Components of your system might limit this number to fewer than 256 vNICs.</p>
<b>Adapter Policy</b> drop-down list	<p>The adapter profile associated with this policy. The profile must already exist to be included in the drop-down list.</p>

You cannot change the other properties of the policy, such as the **Name** field.

- Step 7** Click **Save Changes**.
- Step 8** If a confirmation dialog box displays, click **Yes**.

## Deleting a Dynamic vNIC Connection Policy

You can delete a dynamic vNIC connection policy.

### Procedure

- Step 1** In the **Navigation** pane, click the **LAN** tab.
- Step 2** On the **LAN** tab, expand **LAN > Policies > *Organization\_Name***.
- Step 3** Expand the **Dynamic vNIC Connection Policies** node.
- Step 4** Right-click the policy that you want to delete and choose **Delete**.
- Step 5** If a confirmation dialog box displays, click **Yes**.

## Viewing Dynamic vNIC Properties in a VM

You can view dynamic vNIC properties in a VM.

**Before You Begin**

The VM must be operational.

**Procedure**

- 
- Step 1** In the **Navigation** pane, click the **VM** tab.
  - Step 2** On the VM tab, expand **All > VMware**.
  - Step 3** Expand **Virtual Machines**.
  - Step 4** Expand the virtual machine that contains the dynamic vNIC.
  - Step 5** Choose the dynamic vNIC.
  - Step 6** In the **Work** pane, click the **General** tab.  
In the **Properties** area, the vNIC properties appear.
- 

## Configuring the VM Lifecycle Policy

### VM Lifecycle Policy

The VM lifecycle policy determines how long Cisco UCS Manager retains offline VMs and offline dynamic vNICs in its database. If a VM or dynamic vNIC remains offline after that period, Cisco UCS Manager deletes the object from its database.

All virtual machines (VMs) on Cisco UCS servers are managed by vCenter. Cisco UCS Manager cannot determine whether an inactive VM is temporarily shut down, has been deleted, or is in some other state that renders it inaccessible. Therefore, Cisco UCS Manager considers all inactive VMs to be in an offline state.

Cisco UCS Manager considers a dynamic vNIC to be offline when the associated VM is shut down, or the link between the fabric interconnect and the I/O module fails. On rare occasions, an internal error can also cause Cisco UCS Manager to consider a dynamic vNIC to be offline.

The default VM and dynamic vNIC retention period is 15 minutes. You can configure a retention period of between 1 minute and 7200 minutes (2 days).

**Note**


---

The VM database displayed by Cisco UCS Manager is for information and monitoring only. You cannot manage VMs through Cisco UCS Manager. If you delete a VM from the Cisco UCS Manager database, the VM is not deleted from the server or from vCenter.

---

## Configuring the VM Lifecycle Policy

You can configure the VM lifecycle policy.

## Procedure

- Step 1** In the **Navigation** pane, click the **VM** tab.
- Step 2** On the **VM** tab, expand the **All** node.
- Step 3** On the **VM** tab, click **VMWare**.
- Step 4** In the **Work** pane, click the **Life Cycle Policy** tab.
- Step 5** In the **Life Cycle Policy** area, complete the following fields:

Name	Description
VM Retention field	<p>The period of time that Cisco UCS Manager retains an offline VM in its database. If a VM remains offline after that period, Cisco UCS Manager deletes the VM from its database. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>1 Min</b></li> <li>• <b>1 Hour</b></li> <li>• <b>1 Day</b></li> <li>• <b>other</b>—Cisco UCS Manager displays the <b>Minutes</b> field that allows you to specify a custom retention time.</li> </ul>
Minutes field	Enter an integer between 1 and 7200 minutes (or 5 days).
vNIC Retention field	<p>The period of time that Cisco UCS Manager retains an offline dynamic vNIC in its database. If a dynamic vNIC remains offline after that period, Cisco UCS Manager deletes the dynamic vNIC from its database. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>1 Min</b></li> <li>• <b>1 Hour</b></li> <li>• <b>1 Day</b></li> <li>• <b>other</b>—Cisco UCS Manager displays the <b>Minutes</b> field that allows you to specify a custom retention time.</li> </ul>
Minutes field	Enter an integer between 1 and 7200 minutes (or 5 days).

- Step 6** Click **Save Changes**.

# Creating a BIOS Policy for VM-FEX in High-Performance Mode

For VM-FEX in high performance mode, you must configure specific BIOS settings.

**Note**

pushes BIOS configuration changes through a BIOS policy or default BIOS settings to the Cisco Integrated Management Controller (CIMC) buffer. These changes remain in the buffer and do not take effect until the server is rebooted.

We recommend that you verify the support for BIOS settings in the server that you want to configure. Some settings, such as Mirroring Mode for RAS Memory, are not supported by all Cisco UCS servers.

We recommend that you name this BIOS policy as VMwarePassThru so that you can identify it as being used for VM-FEX in high-performance mode.

You must enable these specific parameters in the following BIOS settings:

- **Processor**—Enable Virtual Technology (VT) and Direct Cache Access.

**Note**

You must enable VT if you intend to run 64-bit VMs on the ESX/ESXi host. An ESX/ESXi host will not run 64-bit VMs unless VT is enabled.

- **Intel Directed IO**—Enable the following parameters:

- VT for Directed IO
- Interrupt Remap
- Coherency Support
- ATS Support
- Pass Through DMA Support

Configure the remaining BIOS settings, as appropriate.

For more information, see the *Cisco UCS Manager GUI Configuration Guide*.



# Installing the Cisco VM-FEX Driver Software Bundle

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This chapter includes the following sections:

- [Cisco VM-FEX Driver Software Bundle Installation Overview](#), page 19
- [Cisco VM-FEX Driver Software Bundle Prerequisites](#), page 19
- [Installing or Upgrading the Cisco VM-FEX Driver Software Bundle Using VUM](#), page 20
- [Upgrading a Host to ESX or ESXi 4.0, Update 3 or to ESX or ESXi 4.1, Update 1 and the Compatible Cisco VM-FEX Driver Software Bundle](#), page 21
- [Upgrading a Host to ESXi 5.0 and the Compatible Cisco VM-FEX Driver Software Bundle](#), page 23
- [Upgrading a Host From ESXi 5.0 to ESXi 5.1 and the Compatible Cisco VM-FEX Driver Software Bundle](#), page 24
- [Upgrading a Host to ESXi 5.1 and the Compatible Cisco VM-FEX Driver Software Bundle](#), page 25
- [Installing or Upgrading the Cisco VM-FEX Driver Software Bundle on an ESX or ESXi Host](#), page 26
- [Uninstalling the Cisco VM-FEX Driver Software Bundle](#), page 28

## Cisco VM-FEX Driver Software Bundle Installation Overview

To use the VM-FEX feature with Cisco UCS, you must install the Cisco UCS M81KR Virtual Interface Card in the Cisco UCS server and install the correct VMware ESX software version and Cisco VM-FEX Driver software bundle on it. The software that you install depends on whether you intend to use the VM-FEX feature in standard mode or high-performance mode. For more information, see [Cisco VM-FEX Driver Software Bundle Prerequisites](#), on page 19.

## Cisco VM-FEX Driver Software Bundle Prerequisites

Before installing the Cisco VM-FEX Driver software bundle, make sure to satisfy these prerequisites:

- You must install a Cisco UCS Virtual Interface Card in the server you intend to use as the hypervisor host. For more information about installing Cisco UCS Virtual Interface Cards, see the *Cisco UCS 5108 Server Chassis Hardware Installation Guide*.
- You must install the correct version of VMware ESX or ESXi software on the Cisco UCS Manager host. For VM-FEX in standard mode, you must install VMware ESX version 4.0, Update 1 software or later versions.
- You must obtain the Cisco VM-FEX Driver software bundle from the Cisco **Download Software** page:
  - For B-Series from, <http://software.cisco.com/download/navigator.html>. Select **Downloads Home > Products > Servers - Unified Computing > Cisco UCS B-Series Blade Server Software** and click **Unified Computing Systems (UCS) Drivers**. From this page, click **Latest Releases** or **All Releases** to select the release you want, and click **Download** to download the **ISO image of UCS-related drivers**.
  - For C-Series from, <http://software.cisco.com/download/navigator.html>. Select **Downloads Home > Products > Servers - Unified Computing > Cisco UCS C-Series Rack-Mount UCS-Managed Server Software** and click **Unified Computing Systems (UCS) Drivers**. From this page, click **Latest Releases** or **All Releases** to select the release you want, and click **Download** to download the **ISO image of UCS-related drivers**.
- You must install the correct version of the Cisco VM-FEX Driver software bundle on the hypervisor host. The Cisco VM-FEX Driver software bundle that you install depends on the VMware ESX or ESXi version you have installed on the hypervisor host. For information about the compatible versions of VMware ESX software and Cisco VM-FEX Driver software bundles, see VM-FEX Software Interoperability Matrix in *Hardware and Software Interoperability Matrix for B Series Servers* at [http://www.cisco.com/en/US/products/ps10477/prod\\_technical\\_reference\\_list.html](http://www.cisco.com/en/US/products/ps10477/prod_technical_reference_list.html).




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**Note** The VEM software bundle is also a component of another product: the Cisco Nexus 1000V switch. Do not be concerned if you see references to this product during the installation of the VEM bundle. This reference is cosmetic only and does not affect the outcome of the installation and implementation of VM-FEX.

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- You must be aware of any installation caveats. For information, see the *Release Notes for Cisco UCS Manager*.

## Installing or Upgrading the Cisco VM-FEX Driver Software Bundle Using VUM

To install the Cisco VM-FEX Driver software bundle using VMware vSphere Update Manager (VUM), you need to log into the VMware vSphere client and copy the VM-FEX driver VIBs or bundles from [cisco.com](http://cisco.com) locally and import them in VUM.

For information about configuring VUM, see the VMware product documentation.

# Upgrading a Host to ESX or ESXi 4.0, Update 3 or to ESX or ESXi 4.1, Update 1 and the Compatible Cisco VM-FEX Driver Software Bundle

You can use this procedure to upgrade a host to ESX or ESXi 4.0, Update 3 or 4.1, Update 1 and simultaneously upgrade the Cisco VM-FEX Driver software bundle.



## Note

You can also perform this procedure using VMware VUM. For more information, see [Installing or Upgrading the Cisco VM-FEX Driver Software Bundle Using VUM](#), on page 20 and the VMware documentation.

## Before You Begin

- You have copied the ESX or ESXi host software and Cisco VM-FEX Driver software bundle to the /tmp directory.

To determine the correct Cisco VM-FEX Driver software bundle for your ESX or ESXi version and Cisco UCS release, see the *Hardware and Software Interoperability Matrix for B Series Servers*.

## Procedure

- Step 1** Power off the VMs or migrate all VMs to another host.
- Step 2** Migrate the vmk0 management interface to the vSwitch.
- Step 3** Remove the host from pass-through switching (PTS) mode.
- Step 4** If you are upgrading from ESX or ESXi 4.0, Update 1 to ESX or ESXi 4.0, Update 3, uninstall the VIB that enables pass-through switching (PTS). Otherwise, continue to step 6.
  - a) Enter the following command to identify the Cisco VM-FEX Driver VIB:
 

```
esxupdate query --vib-view | grep cross_cisco | grep installed
```

 The output appears showing the VIB package to be removed.
  - b) Enter the following command to remove the VIB.
 

```
esxupdate -b VIB_package remove
```

### Example:

```
[root@serialport ~]# esxupdate query --vib-view | grep cross_cisco | grep installed
[root@serialport ~]# cross_cisco-vem-v100-esx_4.0.4.1.1.31-1.11.11 installed
2010-03-11T10:02:29.076573-05:00
[root@serialport ~]# esxupdate -b cross_cisco-vem-v100-esx_4.0.4.1.1.31-1.11.11 remove
```

- Step 5** If you are upgrading a host from ESX or ESXi 4.0, Update 1 to ESX or ESXi 4.0, Update 3, copy the ESX or ESXi Patch 04 (ESX400-201001001.zip) and the ESX or ESXi Patch 05 (ESX400-201003001.zip) to the /tmp directory and install them, if you have not already installed them. Otherwise, continue to step 6.
 

```
vihostupdate --install --bundle "[path to VMware Update offline patch]" --server [vsphere host IP address]"
```

**Example:**

```
[root@serialport ~]# vihostupdate --install --bundle "/tmp/Patch04/ESX400-201002001.zip"
--server 10.10.10.1
[root@serialport ~]# vihostupdate --install --bundle
"/tmp/Patch05/BuiltByVMware/ESX/20100330/ESX400-201003001.zip" --server 10.10.10.1
```

- Step 6** Go to the directory where the ESX or ESXi host software and Cisco VM-FEX Driver software bundle were copied.

**Example:**

```
[root@serialport ~]# cd tmp
[root@serialport tmp]#
```

- Step 7** Put the host in maintenance mode.

- Step 8** Enter the **vihostupdate** command:

```
vihostupdate --install --bundle "[path to VMware Update offline bundle]", "[path to Cisco updated VEM
offline bundle]" --server [vsphere host IP address]"
```

**Example:**

This example shows how to upgrade to ESX 4.0, Update 3 using the **vihostupdate** command from a client:

```
[root@serialport tmp]# vihostupdate --install --bundle
"/tmp/update-from-esx4.0-4.0_update03.zip", "/root/UPGRADE/BL/VEM400-201101406.zip --server
10.10.10.1
Enter username: root
Enter password:
Please wait installation in progress ...
The update completed successfully, but the system needs to be rebooted for the changes to
be effective.
[root@serialport tmp]#
```

**Example:**

This example shows how to upgrade to ESX 4.1, Update 1 using the **vihostupdate** command from a client:

```
[root@serialport tmp]# vihostupdate --install --bundle
"/tmp/update-from-esx4.1-4.1_update01.zip" , "/root/UPGRADE/BL/VEM410-201101407.zip" --server
10.10.10.1
Enter username: root
Enter password:
Please wait patch installation is in progress ...
The update completed successfully, but the system needs to be rebooted for the changes to
be effective.
```

- Step 9** Reboot the host.

- Step 10** Verify that the installation was successful. A successful installation shows the correct ESX or ESXi version and the correct Cisco VM-FEX Driver software bundle installed.

**Example:**

This example shows how to verify that the correct Cisco VM-FEX Driver software bundle was installed:

```
[root@serialport tmp]# esxupdate query --vib-view | grep cross_cisco | grep installed
cross_cisco-vem-v130-esx 4.2.1.1.4.0.0-1.20.1 installed
2011-08-18T00:01:07.104096+00:00
[root@serialport tmp]# vmkload_mod -l | grep vem
vem-v130-svs-mux 0x418035e73000 0x4000 0x417ff6d1fc40 0x1000 56 Yes
```

```
vem-v130-pts          0x418035e77000      0x16000      0x417ff6d193c0      0x1000      57 Yes
```

This example shows how to verify that ESX 4.0, Update 3 was installed:

```
[root@serialport tmp]# vmware -v
VMware ESX 4.0.0 build-398348
[root@serialport tmp]#
```

This example show how to verify that ESX 4.1, Update 1 was installed:

```
[root@serialport tmp]# vmware -v
VMware ESX 4.1.0 build-348481
[root@serialport tmp]#
```

- Step 11** Remove the host from maintenance mode.
- Step 12** Place the host in pass-through switching (PTS) mode.
- Step 13** Migrate the vmk0 management interface back to the host.
- Step 14** Power on the VMs or migrate all VMs back to the original host.

## Upgrading a Host to ESXi 5.0 and the Compatible Cisco VM-FEX Driver Software Bundle

You can upgrade a host to ESXi 5.0 with the compatible Cisco VM-FEX Driver software bundle using an Interactive upgrade from CD, DVD, or USB drive or using VMware vSphere Update Manager (VUM) (also known as an online upgrade).

### Before You Begin

You have copied the ESXi 5.0 host software and the Cisco VM-FEX Driver software bundle to the /tmp directory. To determine the correct Cisco VM-FEX Driver software bundle to use, see the *Hardware and Software Interoperability Matrix for B Series Servers*.

### Procedure

- Step 1** Upgrade the Cisco UCS to release 1.4 and the ESX or ESXi host to one of the following releases:
  - ◦ Release 4.0, Update 3 with Cisco VM-FEX Driver software bundle v130-4.2.1.1.4.0.0-1.20.1.vib (or v129-4.2.1.1.4.0.0-1.20.1.vib if VUM was used)
  - Release 4.1, Update 1 with Cisco VM-FEX Driver software bundle v130-4.2.1.1.4.0.0-2.0.1.vib (or v129-4.2.1.1.4.0.0-2.0.1.vib if VUM was used)

For more information, see [Upgrading a Host to ESX or ESXi 4.0, Update 3 or to ESX or ESXi 4.1, Update 1 and the Compatible Cisco VM-FEX Driver Software Bundle](#), on page 21.

- Step 2** Upgrade the Cisco UCS to release 2.0.  
For more information, see *Upgrading Cisco UCS from Release 1.4 to Release 2.0*.

- Step 3** Because VM-FEX for VMware has Cisco VM-FEX Drivers that require custom .vib files, create a custom ESX installable ISO file that includes the Cisco VM-FEX Driver software bundle. This custom ESX installable ISO file is installed as part of the ESXi 5.0 host upgrade.  
For more information, see the "Upgrading Hosts That Have Third-Party Custom VIBs" section in the VMware *vSphere Upgrade* document for vSphere 5.0.
- Step 4** Upgrade the host to ESXi 5.0 and install the custom ESX installable ISO file.  
For more information, see the VMware *vSphere Upgrade* document for vSphere 5.0.
- Note** You can also upgrade the host to ESXi 5.0 using VUM. For more information, see [Installing or Upgrading the Cisco VM-FEX Driver Software Bundle Using VUM, on page 20](#) and the VMware documentation.
- 

## Upgrading a Host From ESXi 5.0 to ESXi 5.1 and the Compatible Cisco VM-FEX Driver Software Bundle

You can upgrade a host to ESXi 5.1 with the compatible Cisco VM-FEX Driver software bundle using an Interactive upgrade from CD, DVD, or USB drive or using VMware vSphere Update Manager (VUM) (also known as an online upgrade).

### Before You Begin

You have copied the ESXi 5.1 host software and the Cisco VM-FEX Driver software bundle to the /tmp directory. To determine the correct Cisco VM-FEX Driver software bundle to use, see the *Hardware and Software Interoperability Matrix for B Series Servers*.

### Procedure

---

- Step 1** Upgrade the Cisco UCS to release 1.4 and the ESX or ESXi host to one of the following releases:
- ◦ Release 4.0, Update 3 with Cisco VM-FEX Driver software bundle v130-4.2.1.1.4.0.0-1.20.1.vib (or v129-4.2.1.1.4.0.0-1.20.1.vib if VUM was used)
  - Release 4.1, Update 1 with Cisco VM-FEX Driver software bundle v130-4.2.1.1.4.0.0-2.0.1.vib (or v129-4.2.1.1.4.0.0-2.0.1.vib if VUM was used)

For more information, see [Upgrading a Host to ESX or ESXi 4.0, Update 3 or to ESX or ESXi 4.1, Update 1 and the Compatible Cisco VM-FEX Driver Software Bundle, on page 21](#).

- Step 2** Upgrade the Cisco UCS to release 2.0.  
For more information, see *Upgrading Cisco UCS from Release 1.4 to Release 2.0*.
- Step 3** Because VM-FEX for VMware has Cisco VM-FEX Drivers that require custom .vib files, create a custom ESX installable ISO file that includes the Cisco VM-FEX Driver software bundle. This custom ESX installable ISO file is installed as part of the ESXi 5.1 host upgrade.  
For more information, see the "Upgrading Hosts That Have Third-Party Custom VIBs" section in the VMware *vSphere Upgrade* document for vSphere 5.1.

- Step 4** Upgrade the host to ESXi 5.1 and install the custom ESX installable ISO file. For more information, see the VMware *vSphere Upgrade* document for vSphere 5.1.

**Note** You can also upgrade the host to ESXi 5.1 using VUM. For more information, see [Installing or Upgrading the Cisco VM-FEX Driver Software Bundle Using VUM, on page 20](#) and the VMware documentation.

## Upgrading a Host to ESXi 5.1 and the Compatible Cisco VM-FEX Driver Software Bundle

You can upgrade a host to ESXi 5.1 with the compatible Cisco VM-FEX Driver software bundle using an Interactive upgrade from CD, DVD, or USB drive or using VMware vSphere Update Manager (VUM) (also known as an online upgrade).

### Before You Begin

You have copied the ESXi 5.1 host software and the Cisco VM-FEX Driver software bundle to the /tmp directory. To determine the correct Cisco VM-FEX Driver software bundle to use, see the *Hardware and Software Interoperability Matrix for B Series Servers*.

### Procedure

- Step 1** Upgrade the Cisco UCS to release 1.4 and the ESX or ESXi host to one of the following releases:
- ◦ Release 4.0, Update 3 with Cisco VM-FEX Driver software bundle v130-4.2.1.1.4.0.0-1.20.1.vib (or v129-4.2.1.1.4.0.0-1.20.1.vib if VUM was used)
  - Release 4.1, Update 1 with Cisco VM-FEX Driver software bundle v130-4.2.1.1.4.0.0-2.0.1.vib (or v129-4.2.1.1.4.0.0-2.0.1.vib if VUM was used)

For more information, see [Upgrading a Host to ESX or ESXi 4.0, Update 3 or to ESX or ESXi 4.1, Update 1 and the Compatible Cisco VM-FEX Driver Software Bundle, on page 21](#).

- Step 2** Upgrade the Cisco UCS to release 2.0.  
For more information, see *Upgrading Cisco UCS from Release 1.4 to Release 2.0*.
- Step 3** Because VM-FEX for VMware has Cisco VEMs that require custom .vib files, create a custom ESX installable ISO file that includes the Cisco VM-FEX Driver software bundle. This custom ESX installable ISO file is installed as part of the ESXi 5.1 host upgrade.  
For more information, see the "Upgrading Hosts That Have Third-Party Custom VIBs" section in the VMware *vSphere Upgrade* document for vSphere 5.0.
- Step 4** Upgrade the host to ESXi 5.1 and install the custom ESX installable ISO file.  
For more information, see the VMware *vSphere Upgrade* document for vSphere 5.1.
- Note** If the installer displays the warning "DISTRIBUTED\_VIRTUAL\_SWITCH WARNING: Host contains DVS VIB(s) that have no substitute on the ISO," press **Enter** to continue.

**Note** You can also upgrade the host to ESXi 5.1 using VUM. For more information, see [Installing or Upgrading the Cisco VM-FEX Driver Software Bundle Using VUM, on page 20](#) and the VMware documentation.

During remediation when upgrading using VUM, check the check box for **Remove installed third-party software that is incompatible with the upgrade, and continue with the remediation.**

## Installing or Upgrading the Cisco VM-FEX Driver Software Bundle on an ESX or ESXi Host

Use this procedure to install the Cisco VM-FEX Driver software bundle on a host.



**Note** You can also perform this procedure using VMware VUM. For more information, see [Installing or Upgrading the Cisco VM-FEX Driver Software Bundle Using VUM, on page 20](#) and the VMware documentation.

### Before You Begin

- You have copied the ESX or ESXi host software and Cisco VM-FEX Driver software bundle to the /tmp directory.

To determine the correct Cisco VM-FEX Driver software bundle for your ESX or ESXi version and Cisco UCS release, see the *Hardware and Software Interoperability Matrix for B Series Servers*.

### Procedure

**Step 1** Go to the directory where the ESX or ESXi host software and Cisco VM-FEX Driver software bundle were copied.

#### Example:

```
[root@serialport ~]# cd tmp
[root@serialport tmp]#
```

**Step 2** If the host is at ESXi Release 5, proceed to step 3. If the host is at ESX or ESXi Release 4.0 or 4.1, do one of the following :

- If you are performing this installation or upgrade remotely from a client, put the host in maintenance mode and enter the **vihostupdate** command:

```
vihostupdate --install --bundle [path to desired offline Cisco VM-FEX Driver software bundle] --server [vsphere host IP address]
```

#### Example:

The following examples shows how to install or upgrade a Cisco VM-FEX Driver software bundle remotely.

```
[root@serialport ~]# vihostupdate --install --bundle VEM400-201108405.zip --server 192.0.2.1
Enter username: root
Enter password:
Please wait patch installation is in progress ...
Host updated successfully.
```

- If you are performing this installation or upgrade locally on the ESX or ESXi host, log into the each host separately and, from the /tmp directory, use the **esxupdate** command to install the Cisco VM-FEX Driver software. This command loads the software manually onto the host, loads the kernel modules, and starts the Cisco VM-FEX Driver Agent on the running system.

**esxupdate --bundle [VMware offline update bundle] update**

#### Example:

The following example shows how to install or upgrade a Cisco VM-FEX Driver software bundle locally on a host.

```
~ # esxupdate -b cross_cisco-vem-v132-4.2.1.1.4.1.0-1.20.4.vib update
cross_cisco-vem-v132-4.2.1.1.4.1.0-1.20.4.vib
#####
[100%]

Unpacking cross_cisco-vem-v132-esx_4.2.1.1.4.1.0-1.20.4.vib
#####
[100%]

Installing packages :cross_cisco-vem-v132-esx_4.2.1.1.4.1.0-1.2..
#####
[100%]

Running [/usr/sbin/vmkmmod-install.sh]...
ok.
```

**Step 3** If the host is at ESXi Release 5.0, do one of the following:

- If you are performing this installation or upgrade remotely from a client, put the host in maintenance mode and enter the **esxcli** command, as follows:

**esxcli --server Server-IP-Address software vib install --viburl URL-Path-to-vib**

#### Example:

The following example shows how to perform this installation or upgrade remotely from a client.

```
# esxcli --server 30.20.41.197 software vib install --viburl
http://192.0.2.1/cross_cisco-vem-v132-4.2.1.1.4.1.0-3.0.4.vib
Enter username: root
Enter password:
Installation Result
Message: Operation finished successfully.
Reboot Required: false
VIBs Installed: Cisco_bootbank_cisco-vem-v132-esx_4.2.1.1.4.1.0-3.0.4
VIBs Removed:
VIBs Skipped:
```

- If you are performing this installation or upgrade locally on a host, log into the each host separately and from the /tmp directory, enter the following command:

**esxcli software vib install -v /vib-file**

**Example:**

The following example shows how to perform this installation or upgrade locally on a host.

```
# esxcli software vib install -v /cross_cisco-vem-v132-4.2.1.1.4.1.0-3.0.4.vib
Installation Result
  Message: Operation finished successfully.
  Reboot Required: false
  VIBs Installed: Cisco_bootbank_cisco-vem-v132-esx_4.2.1.1.4.1.0-3.0.4
  VIBs Removed:
  VIBs Skipped:
```

**Step 4** (Optional) Verify that the installation or upgrade of the Cisco VM-FEX Driver software bundle was successful on an ESX or ESXi 4.0, 4.1 or 5.0 host, by using the following commands:

```
esxcli software vib get | grep name
```

```
vmkload_mod -l |grep pts
```

**Example:**

The following example shows how to verify that the installation or upgrade of the Cisco VM-FEX Driver software bundle was successful on an ESX 4.1 host:

```
~ # esxupdate query --v |grep cisco
cross_cisco-vem-v132-esx_4.2.1.1.4.1.0-2.0.4 installed
2011-09-04T20:03:24.794110+00:00
~ # vmkload_mod -l |grep pts
mptsas 2 256
vem-v132-pts 0 132
~ #
#
```

## Uninstalling the Cisco VM-FEX Driver Software Bundle

Use this procedure to uninstall the Cisco VM-FEX Driver software bundle from a host. The command that you use removes the software from the host, removes the kernel modules, and stops the VEM Agent on the running system.

**Before You Begin**

- Make sure that the host is not part of any DVS by removing all of the following active ports from the DVS:
  - VMware kernel NICs
  - Virtual switch interfaces
  - Virtual NICs
- You are logged in to the ESX or ESXi host remotely by using secure shell (SSH).

## Procedure

- Step 1** If the host is at ESXi release 5.0, proceed to step 2. If the host is at ESX or ESXi release 4.0 or 4.1, uninstall the Cisco VM-FEX Driver software bundle by using the `esxupdate remove -b VEM_name` command.

### Example:

The following example shows how to remove the Cisco VM-FEX Driver software bundle from a host that is at ESX or ESXi release 4.1:

```
[root@serialport ~]# esxupdate remove -b cross_cisco-vem-v132-esx_4.2.1.1.4.1.0-2.0.4
Removing cisco-vem-v132-esx
#####
[100%]

Running [/usr/sbin/vmkmmod-install.sh]...
ok.
[root@serialport ~]# esxupdate query --v |grep cisco
cross_cisco-vem-v132-esx_4.2.1.1.4.1.0-2.0.4                               uninstalled
    2011-09-05T09:04:51.096141-07:00
[root@serialport ~]#
```

- Step 2** For an ESXi 5.0 host, uninstall the Cisco VM-FEX Driver software bundle by using the `esxcli software vib remove -n --maintenance-mode [Cisco VM-FEX Driver bundle software name]` command.

### Example:

The following example shows how to remove the Cisco VM-FEX Driver software bundle from a host that is at ESXi release 5.0:

```
# esxcli software vib remove --maintenance-mode -n cisco-vem-v132-esx
Removal Result
Message: Operation finished successfully.
Reboot Required: false
VIBs Installed:
VIBs Removed: Cisco_bootbank_cisco-vem-v132-esx_4.2.1.1.4.1.0-3.0.4
VIBs Skipped:
```

- Step 3** If the host is at ESXi release 5.0, proceed to step 4. If the host is at ESX or ESXi release 4.0 or 4.1, verify that the software was successfully uninstalled by checking the output of the `esxupdate query --v |grep cisco` command.

### Example:

The following example shows how to verify that the Cisco VM-FEX Driver software bundle was successfully uninstalled from an ESX or ESXi release 4.1 host:

```
[root@serialport ~]# esxupdate query --v |grep cisco
cross_cisco-vem-v132-esx_4.2.1.1.4.1.0-2.0.4                               uninstalled
    2011-09-05T09:04:51.096141-07:00
[root@serialport ~]#
```

- Step 4** For an ESXi 5.0 host, verify that the software was successfully uninstalled by checking for the output of the `esxcli software vib get | grep cisco` command.

**Example:**

```
~ # esxcli software vib get |grep cisco  
~ #
```

**Step 5** Reboot the system.

---



## Using the Configure VMware Integration Wizard

This chapter includes the following sections:

- [Overview of the Configure VMware Integration Wizard, page 31](#)
- [Configuring the VMware Integration with the Wizard, page 31](#)

### Overview of the Configure VMware Integration Wizard

The **Configure VMware Integration** wizard provides a single access to perform the basic configuration steps that are specific to Cisco UCS Manager. The wizard does not address every vCenter configuration. For example, it does not create a DVS structure that includes a vCenter server folder that contains the datacenter. If you want a folder between the vCenter server and the datacenter, do not use this wizard.

You cannot use this wizard to complete the configuration steps that must be performed in VMware vCenter to complete the integration.

Through the **Configure VMware Integration** wizard, you can perform the following configuration steps:

- 1 Export the vCenter extension files to establish a connection to VMware vCenter.  
You must register the vCenter extension key as a plug-in in VMware vCenter. You cannot perform that step in the **Configure VMware Integration** wizard.
- 2 Define the structure for one VMware vCenter Distributed Virtual Switch (DVS), including the vCenter server, datacenter, DVS folder, and DVS.
- 3 Define the port profile and profile client.
- 4 Apply the configuration to VMware vCenter.

When you have completed the integration steps through the wizard, you must log in to VMware vCenter and associate the VMs and port profiles with the DVS. The port profiles are shown as port groups in VMware vCenter.

### Configuring the VMware Integration with the Wizard

If you prefer not to use this wizard, you can perform each of these steps individually.

### Before You Begin

Before you use the **Configure VMware Integration** wizard, complete the following:

- Configure the VMware ESX host for VM-FEX.
- Configure a VMware vCenter instance for VM-FEX.
- Configure a certificate for VM-FEX.

### Procedure

---

- Step 1** In the **Navigation** pane, click the **VM** tab.
- Step 2** On the **VM** tab, expand the **All** node.
- Step 3** Click **VMware**.
- Step 4** In the **Work** pane, click the **General** tab.
- Step 5** In the **Actions** area, click **Configure VMware Integration**.
- Step 6** In the **Configure VMware Integration** wizard, complete the following:
- [Page 1: Establishing the Connection to vCenter Server, on page 32](#)
  - [Page 2: Defining a VMware vCenter Distributed Virtual Switch, on page 33](#)
  - [Page 3: Defining a Port Profile, on page 35](#)
  - [Page 4: Applying Port Profiles and Configuration to vCenter Server, on page 37](#)
- 

## Page 1: Establishing the Connection to vCenter Server

This procedure directly follows the steps in [Configuring the VMware Integration with the Wizard, on page 31](#). It describes how to establish a connection to VMware vCenter through the **Configure VMware Integration** wizard.

You can skip this page and move onto the next page if you have already exported and registered the vCenter extension key files.

### Before You Begin

- If you want to use a custom extension key, you must modify the extension key before performing this step as described in [\(Optional\) Modifying the vCenter Extension Key, on page 39](#).
- The vCenter server must have network connectivity to the Cisco UCS management port and to the uplink Ethernet port(s) being used by the ESX host. Specifically, the HTTP and HTTPS ports (normally TCP 80 and 443) must not be blocked by any device or policy in the network path.

### Procedure

---

- Step 1** To export the vCenter extension files, click one of the following:

Option	Description
Export	For VMware vCenter version 4.0 update 1 and later. Exports a single vCenter Extension Key file.
Export Multiple	For VMware vCenter version 4.0. Exports nine vCenter Extension Key files.

**Step 2** In the **Export vCenter Extension** dialog box, do the following:

a) In the **Save Location** field, enter the path to the directory where you want to save the extension file or files.

If you do not know the path, click the ... button and browse to the location.

b) Click **OK**.

Cisco UCS Manager generates the extension file(s) and saves them to the specified location.

**Step 3** Copy the downloaded file to a location on the VMware vCenter.

**Step 4** Register the vCenter extension file(s) in VMware vCenter.

For more information, see [Registering a vCenter Extension File in VMware vCenter, on page 40](#), and the instructions on this page in the **Configure VMware Integration** wizard.

**Step 5** Click **Next**.

### What to Do Next

Complete the steps in [Page 2: Defining a VMware vCenter Distributed Virtual Switch, on page 33](#).

## Page 2: Defining a VMware vCenter Distributed Virtual Switch

This procedure directly follows the steps in [Page 1: Establishing the Connection to vCenter Server, on page 32](#). It describes how to define the components of a distributed virtual switch in VMware vCenter through the **Configure VMware Integration** wizard.

### Procedure

**Step 1** In the **vCenter Server** area, complete the following fields to define the connection to VMware vCenter:

Name	Description
vCenter Server Name field	The user-defined name for the vCenter server.  This name can be between 1 and 16 alphanumeric characters. You cannot use spaces or any special characters other than - (hyphen), _ (underscore), : (colon), and . (period), and you cannot change this name after the object is saved.

Name	Description
Description field	The description of the vCenter server. Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), > (greater than), < (less than), or ' (single quote).
vCenter Server Hostname or IP Address field	The hostname or IP address of the vCenter server. <b>Note</b> If you use a hostname rather than an IPv4 or IPv6 address, you must configure a DNS server. If the Cisco UCS domain is not registered with Cisco UCS Central or DNS management is set to <b>local</b> , configure a DNS server in Cisco UCS Manager. If the Cisco UCS domain is registered with Cisco UCS Central and DNS management is set to <b>global</b> , configure a DNS server in Cisco UCS Central.
vCenter Server Port field	Specifies the HTTP port number of vCenter. The default port number is 80 and is displayed in this field as default. Although the communication is HTTPS, vCenter receives the packets on its HTTP port. The valid range is 1-65355.

**Step 2** In the **Datacenter** area, complete the following fields to create the datacenter in VMware vCenter:

Name	Description
vCenter Datacenter Name field	The name of the vCenter Datacenter. This name can be between 1 and 16 characters. You can use spaces and any other ASCII characters except for ` (accent), \ (back slash), ^ (carat), " (double quote), / (forward slash), > (greater than), < (less than), or ' (single quote).
Description field	The user-defined description of the Datacenter. Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), > (greater than), < (less than), or ' (single quote).

**Step 3** In the **DVS Folder** area, complete the following fields to create a folder to contain the distributed virtual switch in VMware vCenter:

Name	Description
Folder Name field	The name of the folder that contains the distributed virtual switch (DVS). This name can be between 1 and 16 characters. You can use spaces and any other ASCII characters except for ` (accent), \ (back slash), ^ (carat), " (double quote), / (forward slash), > (greater than), < (less than), or ' (single quote).

Name	Description
Description field	The user-defined description of the folder. Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), > (greater than), < (less than), or ' (single quote).

**Step 4** In the DVS area, complete the following fields to create the distributed virtual switch in VMware vCenter:

Name	Description
DVS Name field	The name of the DVS. This name can be between 1 and 16 characters. You can use spaces and any other ASCII characters except for ` (accent), \ (back slash), ^ (carat), " (double quote), / (forward slash), > (greater than), < (less than), or ' (single quote).
Description field	The user-defined description of the DVS. Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), > (greater than), < (less than), or ' (single quote).
DVS field	This can be one of the following: <ul style="list-style-type: none"> <li>• <b>disable</b></li> <li>• <b>enable</b></li> </ul> <p>If you disable the DVS, Cisco UCS Manager does not push any configuration changes related to the DVS to VMware vCenter.</p>

**Step 5** Click Next.

### What to Do Next

Complete the steps in [Page 3: Defining a Port Profile](#), on page 35.

## Page 3: Defining a Port Profile

This procedure directly follows the steps in [Page 2: Defining a VMware vCenter Distributed Virtual Switch](#), on page 33. It describes how to define the components of a distributed virtual switch in VMware vCenter through the **Configure VMware Integration** wizard.

## Procedure

**Step 1** In the **Port Profile** area, complete the following fields to define the port profile:

Name	Description
<b>Name field</b>	The user-defined name for the port profile.  This name can be between 1 and 31 ASCII alphanumeric characters. You cannot use spaces or any special characters other than - (hyphen), _ (underscore), and : (colon), and you cannot change this name after the object has been saved.
<b>Description field</b>	The user-defined description for the port profile.  Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), > (greater than), < (less than), or ' (single quote).
<b>QoS Policy drop-down list</b>	The quality of service policy associated with this port profile.
<b>Network Control Policy drop-down list</b>	The network control policy associated with this port profile.
<b>Max Ports field</b>	The maximum number of ports that can be associated to a port profile is 4096. The default is 64 ports. If the DVS has more than one associated port profile, each port profile client can be set to use a maximum of 4096 ports.
<b>Host Network IO Performance field</b>	This can be one of the following: <ul style="list-style-type: none"> <li>• <b>None</b>—Traffic to and from a virtual machine passes through the DVS.</li> <li>• <b>High Performance</b>— Traffic to and from a virtual machine bypasses the DVS and hypervisor and travels directly between the virtual machines and a virtual interface card (VIC) adapter.</li> </ul>
<b>Pin Group drop-down list</b>	The pin group associated with this port profile.
<b>Type field</b>	The type of port profile. This can be one of the following: <ul style="list-style-type: none"> <li>• <b>Regular</b>—Used for all port profiles except for SCVMM. Select regular port profile for KVM and VMware hypervisors.</li> <li>• <b>SLA Only</b>—Used for SCVMM only.</li> </ul> <p><b>Note</b> This field is not displayed for port profile clients used by logical switches.</p>

**Step 2** In the **VLANs** area, do the following to assign one or more VLANs to the port profile:

- a) In the **Select** column, check the check box in the appropriate row for each VLAN that you want to use in the port profile.
- b) In the **Native VLAN** column, click the radio button in the appropriate row for the VLAN that you want to designate as the native VLAN.

**Step 3** In the **Client Profile** area, do the following to create a profile client for the port profile:

Name	Description
<b>Name</b> field	The user-defined name for the profile client.  This name can be between 1 and 16 ASCII alphanumeric characters. You cannot use spaces or any special characters other than - (hyphen), _ (underscore), and : (colon), and you cannot change this name after the object has been saved.
<b>Description</b> field	The user-defined description of the client.  Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), > (greater than), < (less than), or ' (single quote).
<b>Datacenter</b> drop-down list	Choose a datacenter from the drop-down list or choose <b>All</b> if this profile client applies to all datacenters.
<b>Folder</b> drop-down list	Choose a folder from the drop-down list or choose <b>All</b> if this profile client applies to all folders.
<b>Distributed Virtual Switch</b> drop-down list	Choose a virtual switch from the drop-down list or choose <b>All</b> if this profile client applies to all virtual switches.

**Step 4** Click **Next**.

### What to Do Next

Complete the configuration of the virtual machines in VMware vCenter.

## Page 4: Applying Port Profiles and Configuration to vCenter Server

This procedure directly follows the steps in [Page 3: Defining a Port Profile](#), on page 35. It describes how to apply the port profiles to vCenter Server through the **Configure VMware Integration** wizard.

### Procedure

**Step 1** Review the text on the page in the **Configure VMware Integration** wizard.

**Step 2** Click **Finish**.

Cisco UCS Manager connects to the vCenter Server, creates the specified DVS, and applies the port profiles.

**What to Do Next**

In VMware vCenter, associate the VMs and port profiles with the DVS. The port profiles are shown as port groups in VMware vCenter.



# Connecting Cisco UCS Manager to VMware vCenter

---

This chapter includes the following sections:

- [Connecting Using the Extension Key](#), page 39
- [\(Optional\) Modifying the vCenter Extension Key](#), page 39
- [Exporting a vCenter Extension File from Cisco UCS Manager](#), page 40
- [Registering a vCenter Extension File in VMware vCenter](#), page 40
- [\(Optional\) Configuring a Certificate for VM-FEX](#), page 41

## Connecting Using the Extension Key

### (Optional) Modifying the vCenter Extension Key

You can modify the vCenter extension key to be more meaningful than the default ID string. This provides better system identification.

#### Procedure

---

- Step 1** In the **Navigation** pane, click the **VM** tab.
- Step 2** On the **VM** tab, expand the **All** node.
- Step 3** On the **VM** tab, click **VMWare**.
- Step 4** In the **Work** pane, click the **General** tab.
- Step 5** In the **Actions** area, click **Modify Extension Key**.
- Step 6** In the **Modify Extension Key** dialog box, do the following:
  - In the **Key** field, modify the key as needed.  
A vCenter extension key can have a maximum length of 33 characters. These characters can be letters, numbers, or hyphens. No other characters or spaces are permitted in the extension key.

- b) Click **OK**.

---

### What to Do Next

Export the vCenter extension file or files from Cisco UCS Manager.

## Exporting a vCenter Extension File from Cisco UCS Manager

Depending on the version of VMware vCenter you are using, you can either generate one extension file or a set of nine extension files.

### Procedure

- Step 1** In the **Navigation** pane, click the **VM** tab.
- Step 2** On the **VM** tab, expand the **All** node.
- Step 3** On the **VM** tab, click **VMWare**.
- Step 4** In the **Work** pane, click the **General** tab.
- Step 5** In the **Actions** area, click one of the following links:

Option	Description
<b>Export vCenter Extension</b>	For vCenter version 4.0 update 1 and later versions.
<b>Export Multiple vCenter Extensions</b>	For vCenter version 4.0.

- Step 6** In the **Export vCenter Extension** dialog box, do the following:
- In the **Save Location** field, enter the path to the directory where you want to save the extension file or files.  
If you do not know the path, click the **...** button and browse to the location.
  - Click **OK**.  
Cisco UCS Manager generates the extension file(s) and saves them to the specified location.

---

### What to Do Next

Register the vCenter extension file or files in VMware vCenter.

## Registering a vCenter Extension File in VMware vCenter

In VMware vCenter, the vCenter extension files are called plug-ins.

### Before You Begin

Export the vCenter extension file(s) from Cisco UCS Manager. Ensure that the exported vCenter extension files are saved to a location that can be reached by VMware vCenter.

### Procedure

- 
- Step 1** In VMware vCenter, choose **Plug-ins > Manage Plug-ins**.
  - Step 2** Right-click any empty space below the Available Plug-ins section of the **Plug-in Manager** dialog box and click **New Plug-in**.
  - Step 3** Click **Browse** and navigate to the location where the vCenter extension file(s) are saved.
  - Step 4** Choose a vCenter extension file and click **Open**.
  - Step 5** Click **Register Plug-in**.
  - Step 6** If the **Security Warning** dialog box appears, click **Ignore**.
  - Step 7** Click **OK**.

The vCenter extension file registers as an available VMware vCenter plug-in. You do not need to install the plug-in; instead, leave it in the available state. If you are registering multiple vCenter extension files, repeat this procedure until all files are registered.

---

## (Optional) Configuring a Certificate for VM-FEX

### (Optional) Creating a Certificate for VM-FEX

#### Before You Begin

Copy a certificate to the fabric interconnect.

#### Procedure

- 
- Step 1** In the **Navigation** pane, click the **VM** tab.
  - Step 2** On the **VM** tab, expand the **All** node.
  - Step 3** On the **VM** tab, click **VMWare**.
  - Step 4** In the **Work** pane, click the **Certificates** tab.
  - Step 5** On the icon bar to the right of the table, click **+**.  
If the **+** icon is disabled, click an entry in the table to enable it.
  - Step 6** In the **Create Key Ring** dialog box, complete the following fields:

Name	Description
Name field	The name of the key ring.  Enter up to 510 ASCII characters. This name cannot be changed after the object has been saved.

Name	Description
Protocol field	This can be one of the following: <ul style="list-style-type: none"> <li>• <b>Workspace</b></li> <li>• <b>Volatile</b></li> </ul>
Certificate File field	The name of the certificate file associated with this key ring.
Path field	The path to the certificate file on the server.

**Step 7** Click **OK**.

## (Optional) Copying a Certificate to the Fabric Interconnect

### Before You Begin

(Optional) Obtain a certificate.

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	UCS-A# <b>connect local-mgmt</b>	Enters local management mode.
<b>Step 2</b>	UCS-A(local-mgmt)# <b>copy</b> <i>from-filesystem: [ from-path ]</i> <i>filename to-filesystem: [ to-path ]</i> <i>filename</i>	<p>Copies the certificate from its source location to its destination location. For the <i>from-filesystem:</i> argument, use one of the following syntax:</p> <ul style="list-style-type: none"> <li>• <b>ftp:// username@server-ip-addr</b></li> <li>• <b>scp:// username@server-ip-addr</b></li> <li>• <b>sftp:// username@server-ip-addr</b></li> <li>• <b>tftp:// server-ip-addr : port-num</b></li> </ul> <p>For the <i>to-filesystem:</i> argument, use one of the following syntax:</p> <ul style="list-style-type: none"> <li>• <b>Volatile:</b></li> <li>• <b>Workspace:</b></li> </ul>

The following shows how to use FTP to copy a certificate (certificate.txt) to the temp folder in the workspace:

```
UCS-A # connect local-mgmt
Cisco UCS 6100 Series Fabric Interconnect

TAC support: http://www.cisco.com/tac

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License or the GNU Lesser General Public License. A copy of
each such license is available at
http://www.gnu.org/licenses/gpl.html and
http://www.gnu.org/licenses/lgpl.html

UCS-A(local-mgmt) # copy ftp://192.168.10.10/certs/certificate.txt
workspace:/temp/certificate.txt
UCS-A(local-mgmt) #
```

### What to Do Next

Create a certificate for VM-FEX.

## (Optional) Deleting a Certificate for VM-FEX

### Procedure

---

- Step 1** In the **Navigation** pane, click the **VM** tab.
  - Step 2** On the **VM** tab, expand the **All** node.
  - Step 3** On the **VM** tab, click **VMWare**.
  - Step 4** In the **Work** pane, click the **Certificates** tab.
  - Step 5** In the **Key Rings** table, click the certificate you want to delete.
  - Step 6** Right-click the certificate you want to delete and select **Delete**.
  - Step 7** If a confirmation dialog box displays, click **Yes**.
-





# CHAPTER 6

## Configuring Distributed Virtual Switches in Cisco UCS

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This chapter includes the following sections:

- [Distributed Virtual Switches](#), page 45
- [Overview of Creating a DVS in Cisco UCS Manager](#), page 45
- [Configuring a Distributed Virtual Switch](#), page 46
- [Managing Distributed Virtual Switches](#), page 49

### Distributed Virtual Switches

The Cisco UCS distributed virtual switch (DVS) is a software-based virtual switch that runs along side the vSwitch in the ESX hypervisor and can be distributed across multiple ESX hosts. Unlike the vSwitch, which uses its own local port configuration, a DVS that is associated with multiple ESX hosts uses the same port configuration across all ESX hosts.

After associating an ESX host to a DVS, you can migrate existing VMs from the vSwitch to the DVS, and you can create VMs to use the DVS instead of the vSwitch. With the VM-FEX for VMware implementation, when a VM uses the DVS, all VM traffic passes through the DVS and ASIC-based switching is performed by the fabric interconnect.

### Overview of Creating a DVS in Cisco UCS Manager

To create a distributed virtual switch (DVS) in Cisco UCS Manager, you must first create a vCenter, a datacenter under the vCenter, and a datacenter folder under the datacenter. You can then create a DVS in the datacenter folder. The vCenter name you specify in Cisco UCS Manager does not need to match the vCenter name specified in VMware vCenter; however, the datacenter name you specify in Cisco UCS Manager must match the datacenter name specified in VMware vCenter. The datacenter folder and DVS you create in Cisco UCS Manager are pushed to VMware vCenter.

# Configuring a Distributed Virtual Switch

## Before You Begin

You must first create a datacenter in VMware vCenter. Do not create the folder inside the datacenter or the DVS in VMware vCenter.

## Procedure

- Step 1** In the **Navigation** pane, click the **VM** tab.
- Step 2** On the **VM** tab, expand the **All** node.
- Step 3** Right-click the **VMWare** node and choose **Configure vCenter**.
- Step 4** On the **Configure vCenter** page, do the following:
- Complete the following fields:

Name	Description
<b>Name</b> field	The name of the vCenter folder.  This name can be between 1 and 16 characters. You can use spaces and any other ASCII characters except for ` (accent), \ (back slash), ^ (carat), " (double quote), / (forward slash), > (greater than), < (less than), or ' (single quote).
<b>Description</b> field	A user-defined description of the folder.  Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), > (greater than), < (less than), or ' (single quote).

- Click **Next**.

- Step 5** On the **Create Folder** page, click one of the following:

Option	Description
<b>Next</b>	Moves to the next page. Choose this option if the vCenter structure does not require you to include the datacenter in a high-level folder.  If you choose this option, continue with Step 7.
<b>Add</b>	Opens the <b>Create Folder</b> dialog box, where you can add a high-level folder above the datacenter.  If you choose this option, continue with Step 6.

- Step 6** (Optional) In the **Create Folder** dialog box, do the following:
- Complete the following fields:

Name	Description
Name field	<p>The name of the vCenter folder.</p> <p>This name can be between 1 and 16 characters. You can use spaces and any other ASCII characters except for ` (accent), \ (back slash), ^ (carat), " (double quote), / (forward slash), &gt; (greater than), &lt; (less than), or ' (single quote).</p>
Description field	<p>A user-defined description of the folder.</p> <p>Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), &gt; (greater than), &lt; (less than), or ' (single quote).</p>

b) Click **Next**.

**Step 7** On the **Create Datacenter** page, do the following:

a) Click **Add**.

b) In the **Create Datacenter** dialog box, complete the following fields:

Name	Description
Name field	<p>The name of the datacenter.</p> <p>This name can be between 1 and 16 characters. You can use spaces and any other ASCII characters except for ` (accent), \ (back slash), ^ (carat), " (double quote), / (forward slash), &gt; (greater than), &lt; (less than), or ' (single quote).</p> <p>The datacenter name that you specify in Cisco UCS Manager must match the name of the datacenter previously created in VMware vCenter.</p>
Description field	<p>The user-defined description of the datacenter.</p> <p>Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), &gt; (greater than), &lt; (less than), or ' (single quote).</p>

c) Click **Next**.

**Step 8** In the **Create Folder** page, do the following to create a folder in the datacenter:

a) Click **Add**.

b) In the **Create Folder** dialog box, complete the following fields:

Name	Description
<b>Name field</b>	The name of the vCenter folder. This name can be between 1 and 16 characters. You can use spaces and any other ASCII characters except for ` (accent), \ (back slash), ^ (carat), " (double quote), / (forward slash), > (greater than), < (less than), or ' (single quote).
<b>Description field</b>	A user-defined description of the folder. Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), > (greater than), < (less than), or ' (single quote).

c) Click **Next**.

**Step 9** On the **Create Distributed Virtual Switches** page, do the following to create a distributed virtual switch in the folder:

- Click **Add** to add a distributed virtual switch to the folder.
- In the **Create Distributed Virtual Switches** dialog box, complete the following fields:

Name	Description
<b>Name field</b>	The name of the distributed virtual switch. This name can be between 1 and 16 characters. You can use spaces and any other ASCII characters except for ` (accent), \ (back slash), ^ (carat), " (double quote), / (forward slash), > (greater than), < (less than), or ' (single quote).
<b>Description field</b>	The user-defined description of the distributed virtual switch. Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), > (greater than), < (less than), or ' (single quote).
<b>Admin State field</b>	This can be one of the following: <ul style="list-style-type: none"> <li>• <b>Enabled</b></li> <li>• <b>Disabled</b></li> </ul> <p>If you disable the DVS, Cisco UCS Manager does not push any configuration changes related to the DVS to VMware vCenter.</p>

c) Click **OK**.

**Step 10** Click **Finish** if you have finished adding all datacenters, folders, and DVSEs to the vCenter. You may need to click **Finish** more than once to exit the wizard. You can stop at any page to add another datacenter, folder, or DVS.

# Managing Distributed Virtual Switches

## Adding a Folder to an Existing vCenter

You can add a folder inside an existing vCenter and place your datacenters inside the folder. However, this folder is optional.

### Procedure

- Step 1** In the **Navigation** pane, click the **VM** tab.
- Step 2** On the **VM** tab, expand the **VMWare** node.
- Step 3** Right-click the vCenter to which you want to add a datacenter and choose **Create Folder**.
- Step 4** (Optional) In the **Create Folder** dialog box, do the following:
- a) Complete the following fields:

Name	Description
Name field	<p>The name of the vCenter folder.</p> <p>This name can be between 1 and 16 characters. You can use spaces and any other ASCII characters except for ` (accent), \ (back slash), ^ (carat), " (double quote), / (forward slash), &gt; (greater than), &lt; (less than), or ' (single quote).</p>
Description field	<p>A user-defined description of the folder.</p> <p>Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), &gt; (greater than), &lt; (less than), or ' (single quote).</p>

- b) Click **Next**.
- Step 5** On the **Create Datacenter** page, do the following:
- a) Click **Add**.
  - b) In the **Create Datacenter** dialog box, complete the following fields:

Name	Description
<b>Name field</b>	<p>The name of the datacenter.</p> <p>This name can be between 1 and 16 characters. You can use spaces and any other ASCII characters except for ` (accent), \ (back slash), ^ (carat), " (double quote), / (forward slash), &gt; (greater than), &lt; (less than), or ' (single quote).</p> <p>The datacenter name that you specify in Cisco UCS Manager must match the name of the datacenter previously created in VMware vCenter.</p>
<b>Description field</b>	<p>The user-defined description of the datacenter.</p> <p>Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), &gt; (greater than), &lt; (less than), or ' (single quote).</p>

c) Click **Next**.

**Step 6** In the **Create Folder** page, do the following to create a folder in the datacenter:

- a) Click **Add**.
- b) In the **Create Folder** dialog box, complete the following fields:

Name	Description
<b>Name field</b>	<p>The name of the vCenter folder.</p> <p>This name can be between 1 and 16 characters. You can use spaces and any other ASCII characters except for ` (accent), \ (back slash), ^ (carat), " (double quote), / (forward slash), &gt; (greater than), &lt; (less than), or ' (single quote).</p>
<b>Description field</b>	<p>A user-defined description of the folder.</p> <p>Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), &gt; (greater than), &lt; (less than), or ' (single quote).</p>

c) Click **Next**.

**Step 7** On the **Create Distributed Virtual Switches** page, do the following to create a distributed virtual switch in the folder:

- a) Click **Add** to add a distributed virtual switch to the folder.
- b) In the **Create Distributed Virtual Switches** dialog box, complete the following fields:

Name	Description
Name field	<p>The name of the distributed virtual switch.</p> <p>This name can be between 1 and 16 characters. You can use spaces and any other ASCII characters except for ` (accent), \ (back slash), ^ (carat), " (double quote), / (forward slash), &gt; (greater than), &lt; (less than), or ' (single quote).</p>
Description field	<p>The user-defined description of the distributed virtual switch.</p> <p>Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), &gt; (greater than), &lt; (less than), or ' (single quote).</p>
Admin State field	<p>This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Enabled</b></li> <li>• <b>Disabled</b></li> </ul> <p>If you disable the DVS, Cisco UCS Manager does not push any configuration changes related to the DVS to VMware vCenter.</p>

c) Click **OK**.

**Step 8** Click **Finish** if you have finished adding all datacenters, folders, and DVSES to the folder. You may need to click **Finish** more than once to exit the wizard. You can stop at any page to add another datacenter, folder, or DVS.

## Adding a Datacenter to an Existing vCenter

### Before You Begin

You must first create a datacenter in VMware vCenter. Do not create the folder inside the datacenter or the DVS in VMware vCenter.



#### Note

VMware vCenter carries a default limitation of 8192 vDS ports per DVS. Cisco UCS Manager also has a limitation of 4096 ports per DVS. Assuming that user has reached the 4096 limit in Cisco UCS Manager, this will actually consume 5336 ports on the VMware vCenter side (including deleted-pg, uplink-pg, and other implicitly created port-profiles). The remaining ports left can be consumed by adding hosts to the DVS.

## Procedure

- Step 1** In the **Navigation** pane, click the **VM** tab.
- Step 2** On the **VM** tab, expand the **VMWare** node.
- Step 3** Right-click the vCenter to which you want to add a datacenter and choose **Create Datacenter**.
- Step 4** On the **Create Datacenter** page, do the following:
- Click **Add**.
  - In the **Create Datacenter** dialog box, complete the following fields:

Name	Description
<b>Name</b> field	<p>The name of the datacenter.</p> <p>This name can be between 1 and 16 characters. You can use spaces and any other ASCII characters except for ` (accent), \ (back slash), ^ (carat), " (double quote), / (forward slash), &gt; (greater than), &lt; (less than), or ' (single quote).</p> <p>The datacenter name that you specify in Cisco UCS Manager must match the name of the datacenter previously created in VMware vCenter.</p>
<b>Description</b> field	<p>The user-defined description of the datacenter.</p> <p>Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), &gt; (greater than), &lt; (less than), or ' (single quote).</p>

- Click **Next**.

- Step 5** In the **Create Folder** page, do the following to create a folder in the datacenter:
- Click **Add**.
  - In the **Create Folder** dialog box, complete the following fields:

Name	Description
<b>Name</b> field	<p>The name of the vCenter folder.</p> <p>This name can be between 1 and 16 characters. You can use spaces and any other ASCII characters except for ` (accent), \ (back slash), ^ (carat), " (double quote), / (forward slash), &gt; (greater than), &lt; (less than), or ' (single quote).</p>
<b>Description</b> field	<p>A user-defined description of the folder.</p> <p>Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), &gt; (greater than), &lt; (less than), or ' (single quote).</p>

c) Click **Next**.

**Step 6** On the **Create Distributed Virtual Switches** page, do the following to create a distributed virtual switch in the folder:

- a) Click **Add** to add a distributed virtual switch to the folder.
- b) In the **Create Distributed Virtual Switches** dialog box, complete the following fields:

Name	Description
<b>Name</b> field	The name of the distributed virtual switch.  This name can be between 1 and 16 characters. You can use spaces and any other ASCII characters except for ` (accent), \ (back slash), ^ (carat), " (double quote), / (forward slash), > (greater than), < (less than), or ' (single quote).
<b>Description</b> field	The user-defined description of the distributed virtual switch.  Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), > (greater than), < (less than), or ' (single quote).
<b>Admin State</b> field	This can be one of the following: <ul style="list-style-type: none"> <li>• <b>Enabled</b></li> <li>• <b>Disabled</b></li> </ul> If you disable the DVS, Cisco UCS Manager does not push any configuration changes related to the DVS to VMware vCenter.

c) Click **OK**.

**Step 7** Click **Finish** if you have finished adding all folders and distributed virtual switches to the datacenter. You may need to click **Finish** more than once to exit the wizard. You can stop at any page to add another folder or DVS to the datacenter.

## Adding a Folder to a Datacenter

### Procedure

- Step 1** In the **Navigation** pane, click the **VM** tab.
- Step 2** On the **VM** tab, expand the **VMWare** node.
- Step 3** Expand the vCenter that includes the datacenter to which you want to add a folder.
- Step 4** Right-click the datacenter to which you want to add a folder and choose **Create Folder**.
- Step 5** On the **Create Folder** page, do the following to add a folder to the datacenter:
  - a) Complete the following fields:

Name	Description
<b>Name field</b>	The name of the vCenter folder. This name can be between 1 and 16 characters. You can use spaces and any other ASCII characters except for ` (accent), \ (back slash), ^ (carat), " (double quote), / (forward slash), > (greater than), < (less than), or ' (single quote).
<b>Description field</b>	A user-defined description of the folder. Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), > (greater than), < (less than), or ' (single quote).

- b)
  - Click **Next** and continue with Step 6 to create a DVS in the folder.
  - Continue with Step 7 if you do not want to create a DVS in the folder.

**Step 6** On the **Create Distributed Virtual Switches** page, do the following to create a distributed virtual switch in the folder:

- a) Click **Add** to add a distributed virtual switch to the folder.  
b) In the **Create Distributed Virtual Switches** dialog box, complete the following fields:

Name	Description
<b>Name field</b>	The name of the distributed virtual switch. This name can be between 1 and 16 characters. You can use spaces and any other ASCII characters except for ` (accent), \ (back slash), ^ (carat), " (double quote), / (forward slash), > (greater than), < (less than), or ' (single quote).
<b>Description field</b>	The user-defined description of the distributed virtual switch. Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), > (greater than), < (less than), or ' (single quote).
<b>Admin State field</b>	This can be one of the following: <ul style="list-style-type: none"> <li>• <b>Enabled</b></li> <li>• <b>Disabled</b></li> </ul> <p>If you disable the DVS, Cisco UCS Manager does not push any configuration changes related to the DVS to VMware vCenter.</p>

- c) Click **OK**.

**Step 7** Click **Finish** if you have finished adding all folders and DVSES to the datacenter.

You may need to click **Finish** more than once to exit the wizard. You can stop at any page to add another folder or DVS.

---

## Deleting a Folder from a vCenter

If the folder contains a datacenter, Cisco UCS Manager also deletes that datacenter and any folders and DVSES it contains.

### Procedure

---

- Step 1** In the **Navigation** pane, click the **VM** tab.
  - Step 2** On the **VM** tab, expand **All > VMWare**.
  - Step 3** Expand the node for the vCenter that contains the folder you want to delete.
  - Step 4** Right-click the folder and choose **Delete**.
  - Step 5** If a confirmation dialog box displays, click **Yes**.
- 

## Deleting a Datacenter

If the datacenter contains a folder, Cisco UCS Manager also deletes that folder and any DVS it contains.

### Procedure

---

- Step 1** In the **Navigation** pane, click the **VM** tab.
  - Step 2** On the **VM** tab, expand **All > VMWare**.
  - Step 3** If the datacenter that you want to delete is contained in a higher level folder, expand the node for that folder.
  - Step 4** Right-click the datacenter and choose **Delete**.
  - Step 5** If a confirmation dialog box displays, click **Yes**.
- 

## Deleting a Folder from a Datacenter

If the folder contains a DVS, Cisco UCS Manager also deletes that DVS.

## Procedure

---

- Step 1** In the **Navigation** pane, click the **VM** tab.
  - Step 2** On the **VM** tab, expand **All > VMWare**.
  - Step 3** If the datacenter that you want to modify is contained in a higher-level folder, expand the node for that folder.
  - Step 4** Expand the node for the datacenter that contains the folder you want to delete.
  - Step 5** Right-click the folder and choose **Delete**.
  - Step 6** If a confirmation dialog box displays, click **Yes**.
-



# Configuring Port Profiles

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This chapter includes the following sections:

- [Port Profiles, page 57](#)
- [Creating a Port Profile, page 58](#)
- [Modifying the VLANs in a Port Profile, page 59](#)
- [Changing the Native VLAN for a Port Profile, page 60](#)
- [Adding a VLAN to a Port Profile, page 60](#)
- [Deleting a VLAN from a Port Profile, page 61](#)
- [Deleting a Port Profile, page 61](#)
- [Port Profile Clients, page 61](#)
- [Creating a Profile Client, page 62](#)
- [Modifying a Profile Client, page 62](#)
- [Deleting a Profile Client, page 63](#)

## Port Profiles

Port profiles contain the properties and settings that you can use to configure virtual interfaces in Cisco UCS for VM-FEX. The port profiles are created and administered in Cisco UCS Manager. After a port profile is created, assigned to, and actively used by one or more DVSEs, any changes made to the networking properties of the port profile in Cisco UCS Manager are immediately applied to those DVSEs.

In VMware vCenter, a port profile is represented as a port group. Cisco UCS Manager pushes the port profile names to VMware vCenter, which displays the names as port groups. None of the specific networking properties or settings in the port profile are visible in VMware vCenter. You must configure at least one port profile client for a port profile if you want Cisco UCS Manager to push the port profile to VMware vCenter.

# Creating a Port Profile



**Note** If you are configuring VMDirectPath Gen 2, you need to set the **Host Network IO Performance** field to **High Performance**.

## Procedure

- Step 1** In the **Navigation** pane, click the **VM** tab.
- Step 2** On the **VM** tab, expand the **All** node.
- Step 3** Right-click the **Port Profiles** node and choose **Create Port Profile**.
- Step 4** In the **Create Port Profile** dialog box, complete the following fields:

Name	Description
Name field	The user-defined name for the port profile.  This name can be between 1 and 31 ASCII alphanumeric characters. You cannot use spaces or any special characters other than - (hyphen), _ (underscore), and : (colon), and you cannot change this name after the object has been saved.
Description field	The user-defined description for the port profile.  Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), > (greater than), < (less than), or ' (single quote).
QoS Policy drop-down list	The quality of service policy associated with this port profile.
Network Control Policy drop-down list	The network control policy associated with this port profile.
Max Ports field	The maximum number of ports that can be associated to a port profile is 4096. The default is 64 ports. If the DVS has more than one associated port profile, each port profile client can be set to use a maximum of 4096 ports.
Host Network IO Performance field	This can be one of the following: <ul style="list-style-type: none"> <li>• <b>None</b>—Traffic to and from a virtual machine passes through the DVS.</li> <li>• <b>High Performance</b>— Traffic to and from a virtual machine bypasses the DVS and hypervisor and travels directly between the virtual machines and a virtual interface card (VIC) adapter.</li> </ul>
Pin Group drop-down list	The pin group associated with this port profile.

Name	Description
Type field	<p>The type of port profile. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Regular</b>—Used for all port profiles except for SCVMM. Select regular port profile for KVM and VMware hypervisors.</li> <li>• <b>SLA Only</b>—Used for SCVMM only.</li> </ul> <p><b>Note</b> This field is not displayed for port profile clients used by logical switches.</p>

**Step 5** In the **VLANs** area, complete the following fields:

Name	Description
Select column	Check the check box in this column for each VLAN that you want to use.
Name column	The name of the VLAN.
Native VLAN column	To designate one of the VLANs as the native VLAN, click the radio button in this column.

**Step 6** Click **OK**.

## Modifying the VLANs in a Port Profile

### Procedure

- Step 1** In the **Navigation** pane, click the **VM** tab.
- Step 2** On the **VM** tab, expand **All > Port Profiles**.
- Step 3** Right-click the port profile for which you want to modify the VLANs and choose **Modify VLANs**.
- Step 4** In the **Modify VLANs** dialog box, change one or more of the following:

Name	Description
Select column	<p>Check the check box in this column for each VLAN that you want to use.</p> <p><b>Note</b> VLANs and PVLANS can not be assigned to the same vNIC.</p>
Name column	The name of the VLAN.

Name	Description
Native VLAN column	To designate one of the VLANs as the native VLAN, click the radio button in this column.
Create VLAN link	Click this link if you want to create a VLAN.

**Step 5** Click **OK**.

---

## Changing the Native VLAN for a Port Profile

### Procedure

---

- Step 1** In the **Navigation** pane, click the **VM** tab.
- Step 2** On the **VM** tab, expand **All > Port Profiles**.
- Step 3** Right-click the port profile for which you want to change the native VLAN and choose **Modify VLANs**.
- Step 4** In the **Modify VLANs** dialog box, do the following:
- In the **Native VLAN** column, click the radio button in the row for the VLAN that you want to become the native VLAN.
  - Click **OK**.
- 

## Adding a VLAN to a Port Profile

### Procedure

---

- Step 1** In the **Navigation** pane, click the **VM** tab.
- Step 2** On the **VM** tab, expand **All > Port Profiles**.
- Step 3** Right-click the port profile to which you want to add a VLAN and choose **Modify VLANs**.
- Step 4** In the **Modify VLANs** dialog box, do the following:
- In the **Select** column, check the check box in the row for the VLAN that you want to add to the port profile.
  - (Optional) If you want this VLAN to be the native VLAN, click the radio button in the **Native VLAN** column.
  - Click **OK**.
-

## Deleting a VLAN from a Port Profile

You can delete a VLAN from a port profile or change the VLAN that you have assigned as the native VLAN through the following steps.

### Procedure

---

- Step 1** In the **Navigation** pane, click the **VM** tab.
  - Step 2** On the **VM** tab, expand **All > Port Profiles**.
  - Step 3** Right-click the port profile from which you want to delete a VLAN and choose **Modify VLANs**.
  - Step 4** In the **Modify VLANs** dialog box, do the following:
    - a) In the **Select** column, uncheck the check box in the row for the VLAN that you want to delete from the port profile.
    - b) (Optional) You can change the native VLAN to a different VLAN by clicking the radio button in the **Native VLAN** column for a different VLAN.
    - c) Click **OK**.
- 

## Deleting a Port Profile

You cannot delete a port profile if a VM is actively using that port profile.

### Procedure

---

- Step 1** In the **Navigation** pane, click the **VM** tab.
  - Step 2** On the **VM** tab, expand **All > Port Profiles**.
  - Step 3** Right-click the port profile you want to delete and choose **Delete**.
  - Step 4** If a confirmation dialog box displays, click **Yes**.
  - Step 5** Click **OK**.  
Cisco UCS Manager deletes the port profile and all its associations.
- 

## Port Profile Clients

The port profile client determines the DVSEs to which a port profile is applied. By default, the port profile client specifies that the associated port profile applies to all DVSEs in the VMware vCenter. However, you can configure the client to apply the port profile to all DVSEs in a specific datacenter or datacenter folder or only to one DVS.

## Creating a Profile Client

You can create a profile client.

### Procedure

- 
- Step 1** In the **Navigation** pane, click the **VM** tab.
- Step 2** On the **VM** tab, expand **All > Port Profiles**.
- Step 3** Right-click the port profile for which you want to create a profile client and choose **Create Profile Client**.
- Step 4** In the **Create Profile Client** dialog box, complete the following fields:

Name	Description
Name field	The user-defined name for the profile client.  This name can be between 1 and 16 ASCII alphanumeric characters. You cannot use spaces or any special characters other than - (hyphen), _ (underscore), and : (colon), and you cannot change this name after the object has been saved.
Description field	The user-defined description of the client.  Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), > (greater than), < (less than), or ' (single quote).
Datacenter drop-down list	Choose a datacenter from the drop-down list or choose <b>All</b> if this profile client applies to all datacenters.
Folder drop-down list	Choose a folder from the drop-down list or choose <b>All</b> if this profile client applies to all folders.
Distributed Virtual Switch drop-down list	Choose a virtual switch from the drop-down list or choose <b>All</b> if this profile client applies to all virtual switches.

- Step 5** Click **OK**.
- 

### What to Do Next

Complete the configuration of the virtual machines in VMware vCenter.

## Modifying a Profile Client

You can modify a profile client.

### Procedure

- 
- Step 1** In the **Navigation** pane, click the **VM** tab.
  - Step 2** On the **VM** tab, expand **All > Port Profiles**.
  - Step 3** Click the port profile for which you want to modify the profile client.
  - Step 4** In the **Work** pane, click the **Profile Clients** tab.
  - Step 5** Right-click the profile client you want to modify and choose **Show Navigator**.
  - Step 6** In the Navigator for the profile client, change the values for one or more of the following fields:

Name	Description
<b>Name</b> field	The user-defined name for the profile client.
<b>Description</b> field	The user-defined description of the client. Enter up to 256 characters. You can use any characters or spaces except ` (accent mark), \ (backslash), ^ (carat), " (double quote), = (equal sign), > (greater than), < (less than), or ' (single quote).
<b>Datacenter</b> field	A regular expression used to select the appropriate datacenter.
<b>Folder</b> field	A regular expression used to select the appropriate datacenter folder.
<b>Distributed Virtual Switch</b> field	A regular expression used to select the appropriate virtual switch.

- Step 7** Click **OK**.
- 

## Deleting a Profile Client

You cannot delete a port profile client if a VM is actively using the port profile with which the client is associated.

### Procedure

- 
- Step 1** In the **Navigation** pane, click the **VM** tab.
  - Step 2** On the **VM** tab, expand **All > Port Profiles**.
  - Step 3** Click the port profile from which you want to delete a profile client.
  - Step 4** In the **Work** pane, click the **Profile Clients** tab.
  - Step 5** Right-click the profile client that you want to delete and choose **Delete**.
  - Step 6** If a confirmation dialog box displays, click **Yes**.
  - Step 7** Click **Save Changes**.
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# Managing Pending Deletions of Distributed Virtual Switches

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This chapter includes the following sections:

- [Pending Deletions of Distributed Virtual Switches, page 65](#)
- [Viewing Pending Deletions, page 66](#)
- [Changing the Properties of a Pending Deletion, page 66](#)
- [Deleting a Pending Deletion, page 67](#)

## Pending Deletions of Distributed Virtual Switches

When you delete a distributed virtual switch (DVS) from Cisco UCS Manager, either explicitly or by deleting any parent object in the hierarchy, Cisco UCS Manager initiates a connection with VMware vCenter to start the process of deleting the DVS. Until the DVS is successfully deleted from VMware vCenter, Cisco UCS Manager places the DVS in a pending deletion list.

However, Cisco UCS Manager cannot successfully delete a DVS from VMware vCenter if certain situations occur, including the following:

- VMware vCenter database was corrupted
- VMware vCenter was uninstalled
- The IP address for VMware vCenter was changed

If the DVS cannot be successfully deleted from VMware vCenter, the DVS remains in the pending deletion list until the pending deletion is deleted in Cisco UCS Manager or the properties for that pending deletion are changed in a way that allows the DVS to be successfully deleted from VMware vCenter. When you delete a pending deletion, the DVS is deleted from Cisco UCS Manager but is not deleted from VMware vCenter. If the DVS remains in VMware vCenter, you must delete the DVS manually.

You can view the pending deletion list, delete a pending deletion, or change the properties for a pending deletion in Cisco UCS Manager. For example, you can correct the VMware vCenter IP address for a pending deletion so that Cisco UCS Manager can successfully initiate a connection and delete the DVS from VMware vCenter. You cannot cancel the deletion of a DVS from Cisco UCS Manager.

## Viewing Pending Deletions

### Procedure

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- Step 1** In the **Navigation** pane, click the **VM** tab.
  - Step 2** On the **VM** tab, expand the **All** node.
  - Step 3** On the **VM** tab, click **VMWare**.
  - Step 4** In the **Work** pane, click the **Deletion Tasks** tab.
- 

## Changing the Properties of a Pending Deletion

You can change the properties of a pending deletion, if necessary, to ensure that Cisco UCS Manager can successfully initiate a connection and delete the DVS from VMware vCenter.

### Procedure

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- Step 1** In the **Navigation** pane, click the **VM** tab.
- Step 2** On the **VM** tab, expand the **All** node.
- Step 3** On the **VM** tab, click **VMWare**.
- Step 4** In the **Work** pane, click the **Deletion Tasks** tab.
- Step 5** Click the pending deletion for which you want to change the properties.
- Step 6** Right-click the pending deletion and choose **Show Navigator**.
- Step 7** In the **Properties** dialog box, change one or more of the following properties to ensure that Cisco UCS Manager can connect to VMware vCenter:

Name	Description
<b>Hostname</b> field	The host on which the datacenter resides.
<b>Datacenter</b> field	The name of the datacenter.
<b>Protocol</b> field	The datacenter protocol.
<b>Folder</b> field	The folder that is to be deleted.

- Step 8** Click **OK**.  
Cisco UCS Manager attempts to connect with VMware vCenter and delete the DVS.
-

# Deleting a Pending Deletion

When you delete a pending deletion, the DVS is deleted from Cisco UCS Manager but is not deleted from VMware vCenter. If the DVS remains in VMware vCenter, you must delete the DVS manually.

## Procedure

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- Step 1** In the **Navigation** pane, click the **VM** tab.
  - Step 2** On the **VM** tab, expand the **All** node.
  - Step 3** On the **VM** tab, click **VMWare**.
  - Step 4** In the **Work** pane, click the **Deletion Tasks** tab.
  - Step 5** Click the pending deletion that you want to delete.
  - Step 6** Right-click the pending deletion and choose **Delete**.
  - Step 7** If a confirmation dialog box displays, click **Yes**.
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