



Cisco Nexus 1000V vCenter Plug-in Configuration Guide, Release 4.2(1)SV2(2.1)

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Preface

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Audience

This publication is for experienced network administrators who configure and maintain Cisco Nexus devices. This guide is for network and server administrators with the following experience and knowledge:

- An understanding of virtualization
- Using VMware software to create a virtual machine and configure a VMware vSwitch



Note

Knowledge of VMware vNetwork Distributed Switch is not required.

Document Conventions

Command descriptions use the following conventions:

Convention	Description
bold	Bold text indicates the commands and keywords that you enter literally as shown.
<i>Italic</i>	Italic text indicates arguments for which the user supplies the values.

Convention	Description
[x]	Square brackets enclose an optional element (keyword or argument).
[x y]	Square brackets enclosing keywords or arguments separated by a vertical bar indicate an optional choice.
{x y}	Braces enclosing keywords or arguments separated by a vertical bar indicate a required choice.
[x {y z}]	Nested set of square brackets or braces indicate optional or required choices within optional or required elements. Braces and a vertical bar within square brackets indicate a required choice within an optional element.
<i>variable</i>	Indicates a variable for which you supply values, in context where italics cannot be used.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.

Examples use the following conventions:

Convention	Description
<code>screen font</code>	Terminal sessions and information the switch displays are in screen font.
<code>boldface screen font</code>	Information you must enter is in boldface screen font.
<i><code>italic screen font</code></i>	Arguments for which you supply values are in italic screen font.
<>	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.

This document uses the following conventions:



Note

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



Caution

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

Related Documentation for Nexus 1000V Series NX-OS Software for VMware vSphere

This section lists the documents used with the Cisco Nexus 1000V and available on Cisco.com at the following URL:

http://www.cisco.com/en/US/products/ps9902/tsd_products_support_series_home.html

General Information

Cisco Nexus 1000V Documentation Roadmap

Cisco Nexus 1000V Release Notes

Cisco Nexus 1000V and VMware Compatibility Information

Install and Upgrade

Cisco Nexus 1000V Installation and Upgrade Guide

Configuration Guides

Cisco Nexus 1000V High Availability and Redundancy Configuration Guide

Cisco Nexus 1000V Interface Configuration Guide

Cisco Nexus 1000V Layer 2 Switching Configuration Guide

Cisco Nexus 1000V License Configuration Guide

Cisco Nexus 1000V Network Segmentation Manager Configuration Guide

Cisco Nexus 1000V Port Profile Configuration Guide

Cisco Nexus 1000V Quality of Service Configuration Guide

Cisco Nexus 1000V REST API Plug-in Configuration Guide

Cisco Nexus 1000V Security Configuration Guide

Cisco Nexus 1000V System Management Configuration Guide

Cisco Nexus 1000V vCenter Plugin Configuration Guide

Cisco Nexus 1000V VXLAN Configuration Guide

Programming Guide

Cisco Nexus 1000V XML API Configuration Guide

Reference Guides

Cisco Nexus 1000V Command Reference

Cisco Nexus 1000V Resource Availability Reference

Troubleshooting and Alerts

Cisco Nexus 1000V Troubleshooting Guide

Cisco Nexus 1000V Password Recovery Procedure

Cisco NX-OS System Messages Reference

Cloud Services Platform Documentation

The *Cisco Cloud Services Platform* documentation is available at http://www.cisco.com/en/US/partner/products/ps12752/tsd_products_support_series_home.html.

Virtual Security Gateway Documentation

The *Cisco Virtual Security Gateway for Nexus 1000V Series Switch* documentation is available at http://www.cisco.com/en/US/products/ps11208/tsd_products_support_model_home.html.

Virtual Wide Area Application Services (vWAAS) Documentation

The *Virtual Wide Area Application Services* documentation is available at http://www.cisco.com/en/US/products/ps6870/tsd_products_support_series_home.html.

ASA 1000V Cloud Firewall Documentation

The *ASA 1000V Cloud Firewall* documentation is available at http://www.cisco.com/en/US/products/ps12233/tsd_products_support_series_home.html.

Documentation Feedback

To provide technical feedback on this document, or to report an error or omission, please send your comments to nexus1k-docfeedback@cisco.com. We appreciate your feedback.

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, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

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.



Overview

This chapter contains the following sections:

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- [REST API Architecture, page 2](#)
- [Prerequisites for vCenter Plug-in, page 2](#)
- [VMware vSphere Web Client Information, page 3](#)
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Overview of Cisco Nexus 1000V vCenter Plug-in

The Cisco Nexus 1000V virtual switch is a software-based Layer 2 switch for the virtualized server environments that are running VMware ESX. The Cisco Nexus 1000V provides a consistent networking experience across the physical and the virtual environments. It consists of two components: the Virtual Ethernet Module (VEM), a software switch that is embedded in the hypervisor, and a Virtual Supervisor Module (VSM), a module that manages the networking policies and the quality of service for the virtual machines.

With the earlier releases of the Cisco Nexus 1000V, the system administrators had no visibility into the networking aspects of the switch. Starting with Cisco Nexus 1000V Release 4.2(1)SV2(1.1), a plug-in for the VMware vCenter Server, known as vCenter plug-in (VC plug-in) is supported on the Cisco Nexus 1000V virtual switch. It provides the server administrators with a view of the virtual network and a visibility into the networking aspects of the Cisco Nexus 1000V virtual switch.

The vCenter plug-in is supported on VMware vSphere Web Clients only. VMware vSphere Web Client enables you to connect to a VMware vCenter Server system to manage a Cisco Nexus 1000V through a browser. The vCenter plug-in is installed as a new tab in the Cisco Nexus 1000V as part of the user interface in vSphere Web Client.

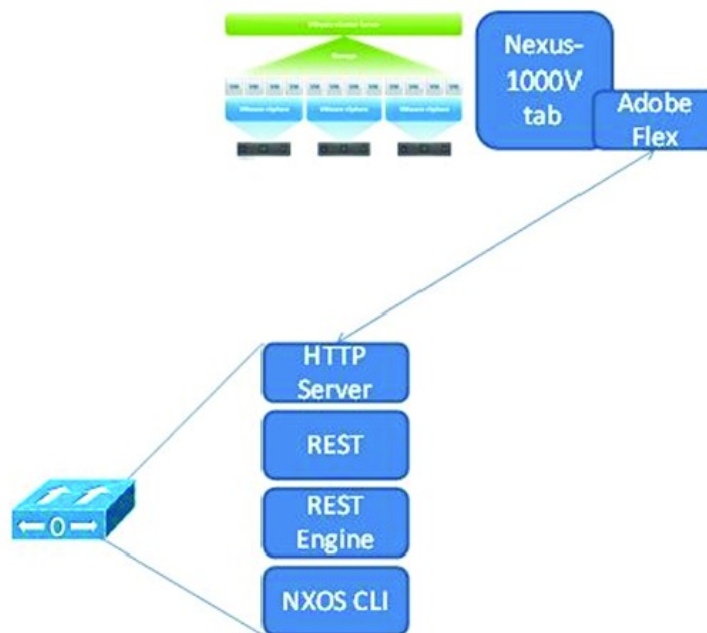
The vCenter plug-in allows the administrators to view the configuration aspects of the VSM. With the vCenter plug-in, the server administrators can export the necessary networking details from the vCenter server, investigate the root cause of and prevent the networking issues, and deploy the virtual machines with suitable policies. The server administrators can monitor and manage the resources effectively with the network details provided in the vCenter plug-in.

REST API Architecture

Starting with Cisco Nexus 1000V Release 4.2(1)SV2(1.1), an extensible REST API architecture is supported on the Cisco Nexus 1000V. The Cisco Nexus 1000V supports the REST API to configure and retrieve the network information from the vCenter Server. The REST APIs are used to implement the vCenter plug-in feature.

See the REST API architecture illustration for the supported architecture on the Cisco Nexus 1000V switch. In the illustration, the VMware vCenter is positioned at the top and the VSM is positioned at the bottom.

Figure 1: REST API Architecture



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Prerequisites for vCenter Plug-in

The vCenter plug-in functionality on the Cisco Nexus 1000V has the following prerequisites:

- VMware vCenter Server 5.0 and later releases.
- VMware vCenter Web Client 5.1. The vCenter plug-in does not work with the vCenter 5.0 Web Client.
- The following browsers are supported for version 5.1 of the vSphere Web Client:
 - Microsoft Internet Explorer 7, 8, and 9.
 - Mozilla Firefox 3.6 and later releases.
 - Google Chrome 14 and later releases.

- vSphere Web Client requires the Adobe flash player version 11.1.0 and later releases to be installed for your browser.
- Make sure that the latest release of Cisco Nexus 1000V is installed and configured to a vCenter.

VMware vSphere Web Client Information

The vCenter plug-in requires the 5.1 version of VMware vSphere Web Client.

**Note**

The vCenter plug-in will not work with the VMware vSphere Web Client 5.0.

**Note**

For more information about installing or upgrading VMware vSphere Web Client, see the VMware documentation: *VMware vSphere ESXi and vCenter Server 5.1 Documentation*.

VMware vSphere Web Client 5.1 requires an SSO or a lookup server to install successfully. You need at least one vCenter Server 5.1 to install the VMware vSphere Web Client 5.1. If you have vCenter Server 5.0, complete the following steps:

- Use vCenter vSphere Server 5.1 to install the VMware vSphere Web Client 5.1
- Use the **admin-app** command to register the vCenter Servers 5.0
- Once registered, you can manage the servers using the vSphere Web Client 5.1

For more details, see the *Cisco Nexus 1000V Troubleshooting Guide*.

**Note**

vSphere Web Client 5.1 cannot directly connect to an ESXi host.

vCenter Plug-in Installation Workflow Overview

An overview of the vCenter Plug-in installation workflow is as follows:

- 1 Install the vCenter infrastructure from the general availability ISO file at the following link: <https://www.vmware.com/products/datacenter-virtualization/vsphere/overview.html>.
- 2 Install the Cisco Nexus 1000V Release 4.2(1)SV2(2.1) software.
- 3 Navigate to the following link with the appropriate IP address and save the file: `http://vsm ip/vcplugin/registerVCPlugin.ps1`.
- 4 Execute the file using PowerCLI.

Upgrading the vCenter Plug-in

Once you have upgraded the VSM, use the following procedure to upgrade the vCenter plug-in.

Before You Begin

- Ensure you upgrade the vCenter plug-in when you upgrade the VSM to the current release of Cisco Nexus 1000v.
- When two different versions of VSMs are configured, ensure you have the highest version of vCenter plug-in installed.

-
- Step 1** Use the following procedure to uninstall the current version of Cisco Nexus 1000v software installed on your system.
- a) Navigate to the following link with the appropriate IP address: *http://VCip/mob*. Click **Hyperlink > Content > Extension Manager**
 - b) Click **unregisterExtension** and under the **value** field, enter the vCenter Plug-in extension key.
 - c) Click **Invoke Method** and refresh the page.
- Step 2** Reload the web client.
- Step 3** Navigate to the following link with the appropriate IP address (upgraded VSM IP address) and save the file: *http://vsmip/vcplugin/registerVCPlugin.ps1*.
- Step 4** Execute the file using PowerCLI to register the vCenter plug-in into the VCenter Server.
-

To verify if the vCenter Plug-in is upgraded, use the following procedure:

- 1 Navigate to the following link *http://VCip/mob*. Click **Hyperlink > Content > Extension Manager**
- 2 Click **extensionList ["com.cisco.vcplugin"]**.

The version string value should be displayed as 1.0.1. You can now login to the web client and view the switch details with different versions of vCenter.



Note

After upgrading the vCenter Plug-in, reboot the web client services if you are not able to view the Cisco Nexus 1000V tab under Switch.



CHAPTER 2

Configuring vCenter Plug-in

This chapter contains the following sections:

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- [Logging into the vCenter Plug-in, page 6](#)
- [Logging into the Virtual Supervisor Modules Using the vCenter Plug-in, page 6](#)
- [Cisco Nexus 1000V vCenter Plug-in Module and VCVA 5.1 Support, page 6](#)
- [Viewing the Getting Started Window, page 8](#)
- [Monitoring the Dashboard Window, page 8](#)
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Registering the vCenter Plug-in to the vCenter Server

You must register the vCenter plug-in on the vCenter server where the Cisco Nexus 1000V has been connected.

- 1 Download the `registerVCPlugin.ps1` script from the location:
`http://VSM-IP-Address/vcplugin/registerVCPlugin.ps1`.
- 2 Save the script.
- 3 Invoke VMware vSphere PowerCLI. You might need to adjust the execution policy. For more information, see <http://technet.microsoft.com/en-us/library/ee176961.aspx>.
- 4 Run the `registerVCPlugin.ps1` script. See the following example for more information. The vCenter server IP is the vCenter server where the Cisco Nexus 1000V is connected. You can ignore the certificate warnings.

```
PowerCLI:\> .\registerVCPlugin.ps1
VC Server IP address [127.0.0.1]: 172.18.217.241
VC Server Username [Administrator]:
VC Server Password: *****
VSM IP address: 172.18.217.242
```

Once the script completes, log in to the Web Client and verify that the plug-in is displayed on vCenter using the vSphere Web Client.

Logging into the vCenter Plug-in

- 1 Install vCenter Server and vSphere Web Client using the VMware vCenter installer.
- 2 Register vCenter Server using the vSphere Web Client.
- 3 Open a vSphere Web Client window and enter the IP address of the registered vCenter Server using the vSphere-client option in the URL window, for example, <https://172.23.138.140:9443/vsphere-client/>. The VMware vSphere Web Client login screen is displayed.
- 4 Choose the IP address of the registered vCenter Server from the drop-down menu.
- 5 Enter the **user name** and the **password**.
- 6 (Optional) Check the **Use Windows Session Authentication** box to authenticate the windows session.
- 7 Click **Login**.

The vSphere Web Client window with a domain view appears.

Logging into the Virtual Supervisor Modules Using the vCenter Plug-in

To log into the Virtual Supervisor Modules (VSMs) using the vCenter plug-in on the Cisco Nexus 1000V virtual switch, you must select the Cisco Nexus 1000V type as the Distributed Virtual Switch (DVS).

- 1 In the vSphere Web Client window, click **Networking** in the **Inventories** tab in the **Solutions** panel and select the **Monitor** tab. The **Cisco Nexus 1000V** tab is displayed.
- 2 Choose the **Cisco Nexus 1000V** tab. When you choose the Cisco Nexus 1000V tab, a new Login window appears in the right panel.
- 3 The VSM IP address appears in the Login window. Enter the **username** and the **password**.
- 4 Click **Login**.

Cisco Nexus 1000V vCenter Plug-in Module and VCVA 5.1 Support

- 1 Install the vCenter infrastructure from the ISO file available under: <https://www.vmware.com/products/datacenter-virtualization/vsphere/overview.html>.
- 2 Install the current release of the Cisco Nexus 1000V software.
- 3 Use the correct IP address and browse to http://vsm-ip/vcplugin_extension.xml.
- 4 Save the XML file.

- 5 In the XML file (for example, see below), replace all instances of VSM-IP with your actual IP address of the VSM and save the XML file.

```
<extension>
  <description>
    <label>VCPlugin</label>
    <summary>Cisco Nexus 1000v Plugin</summary>
  </description>
  <key>com.cisco.vcplugin</key>
  <company>Cisco Systems</company>
  <version>1.0.1</version>
  <server>
    <url>https://{VSM_IP}/vcplugin/vcplugin-package.zip</url>
    <description>
      <label>VCPlugin</label>
      <summary>Cisco Nexus 1000v Plugin</summary>
    </description>
    <company>Cisco Systems</company>
    <type>vsphere-client-serenity</type>
    <adminEmail>admion@cisco.com</adminEmail>

<serverThumbprint>c3:11:03:40:e7:ea:66:12:f6:bb:a0:b5:68:0d:3c:c7:d8:96:59:48</serverThumbprint>

  </server>
  <client>
    <version>1.0.1</version>
    <description>
      <label>VCPlugin</label>
      <summary>Cisco Nexus 1000v Plugin</summary>
    </description>
    <company>Cisco Systems</company>
    <type>vsphere-client-serenity</type>
    <url>https://{VSM_IP}/vcplugin/vcplugin-package.zip</url>
  </client>
  <lastHeartbeatTime>1970-01-01T00:00:00Z</lastHeartbeatTime>
</extension>
```

- 6 Get the sha1 certificate fingerprint from <https://vsm-ip/>.

Figure 2: SHA1 Certificate



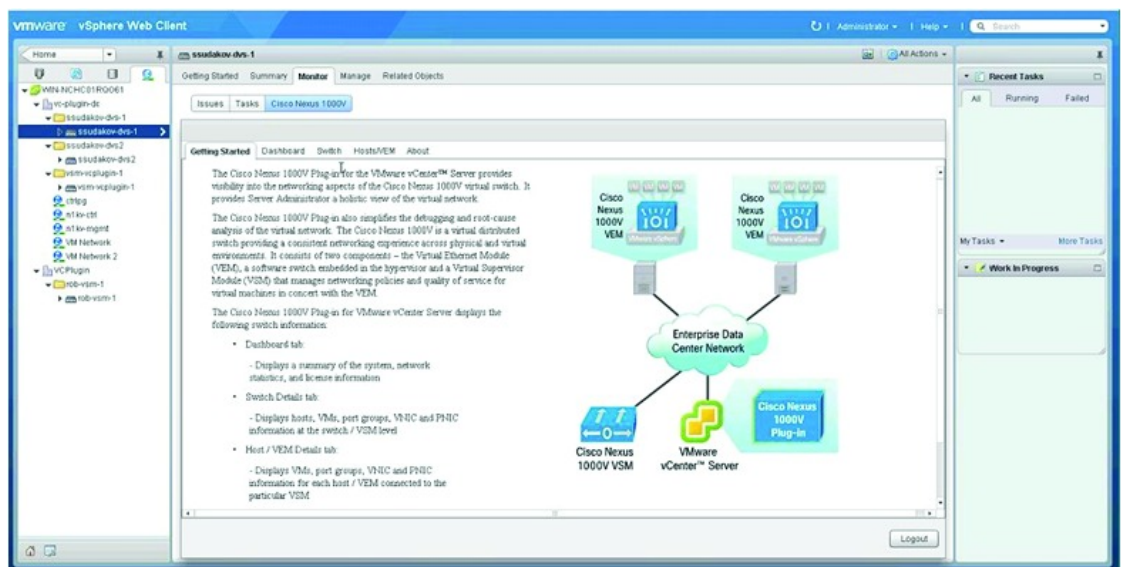
- 7 Click **More Information** and then click **View Certificate**.
- 8 In the downloaded XML file, add the sha1 fingerprint in the server section under <serverthumbprint> Number </serverthumbprint> and save the XML file.

- 9 Edit the webclient.properties on the VMware appliance under `/var/lib/vmware/vsphere-client/webclient.properties` and add `"allowHttp=TRUE"`.
- 10 Navigate to the following link with the correct IP address: <http://VCip/mob>. Click **RegisterExtension**. In the **RegisterExtension** box, copy and paste your updated `vcplugin_extension.xml`.
- 11 Restart the webclient from `/etc/init.d/vsphere-client restart`.

Viewing the Getting Started Window

After you log into the Cisco Nexus 1000V Login window, the Getting Started window appears.

Figure 3: Getting Started Window



The Getting Started window provides a brief introduction of the vCenter plug-in functionality on the Cisco Nexus 1000V and a typical example of the Cisco Nexus 1000V test topology.

Monitoring the Dashboard Window

The Cisco Nexus 1000V plug-in for vCenter Server provides the Virtual Supervisor Module (VSM) and Virtual Ethernet Module (VEM) details to the server administrators. The Cisco Nexus 1000V Dashboard window on the Cisco Nexus 1000V tab in the user interface displays a summary of the Cisco Nexus 1000V switch including the system details, the network statistics, and the license information.

The following table lists the fields in the **System** view.

Table 1: System View in Cisco Nexus 1000V Dashboard Window

Field in the System View	Description
Switch Name	Name of the switch

Field in the System View	Description
NX-OS Version	Cisco NX-OS version and the build that the switch is using
VSM IP	IP address of the Virtual Supervisor Module (VSM)
DC Name	Name of the data center
Connectivity Mode	Mode of connectivity between the VSMS and the VEMs (either Layer-2 or Layer-3 mode).
VC Connectivity	Status of vCenter connectivity
VSM HA	Virtual Supervisor Module (VSM) high availability mode

The following table lists the fields in the **Network Statistics** view.

Table 2: Network Statistics View in Cisco Nexus 1000V Dashboard Window

Field in the Network Statistics View	Description
VNICs vs Max	Maximum number of virtual network interface cards (VNICs) that are supported and their current usage
Hosts vs Max	Maximum number of server hosts that are supported and their current usage
Port-Groups vs Max	Maximum number of port groups that are supported and their current usage
Veths/Host Max	Maximum number of vEthernet ports per host that are supported and their current usage
VLAN vs Max	Maximum number of VLANs that are supported and their current usage
VXLAN vs Max	Maximum number of VXLANs that are supported and their current usage

The following table lists the fields in the **Licenses** view.

Table 3: Licenses View in Cisco Nexus 1000V Dashboard Window

Field in the Licenses View	Description
License Type	Type of the license

Field in the Licenses View	Description
Licenses Available	Licenses that are available to use
Licenses Used	Licenses that are actually used
Earliest Expiration	Earliest expiration time of the license
Status	Status of the license

Monitoring the Switch Window

The Cisco Nexus 1000V plug-in for VMware vCenter Server provides the Virtual Ethernet Module (VEM) details to the server administrators. The Cisco Nexus 1000V Switch window displays the hosts/VEMs, port groups, vNICs, connected Virtual Machines (VMs), and uplinks for the VEMs.

The following tabs are displayed in the **Switch** view:

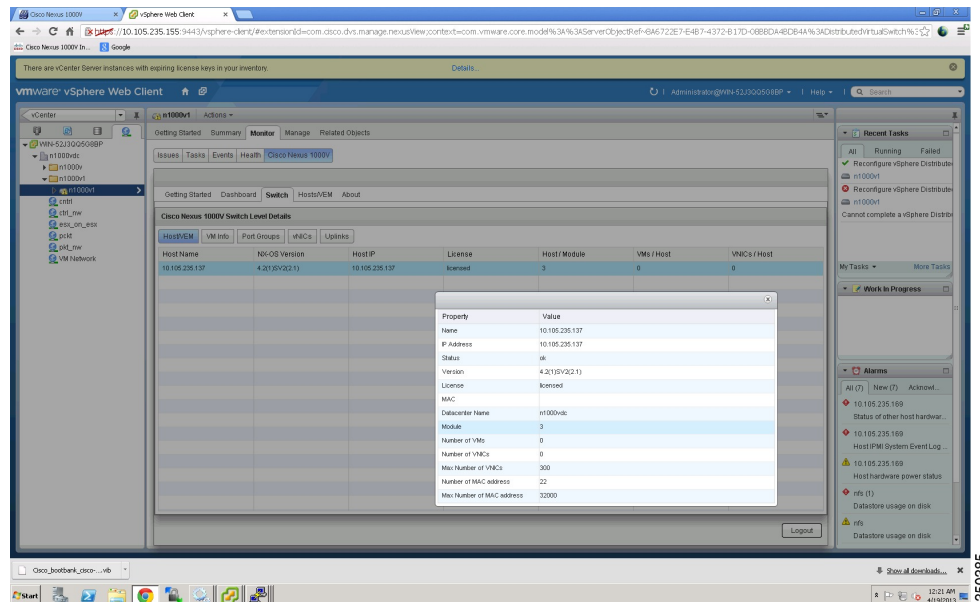
- Host/VEM
- VM Info
- Port Groups
- vNICs
- Uplinks

The following host details are displayed in the **Host/VEM** tab:

- Host name
- NX-OS Version
- Host IP
- License
- Host/Module
- VMs/Host
- vNICs/Host

When you select a host in the table, the details about that host is displayed in the popup window as shown in the following figure.

Figure 4: Displaying Details for the Host in the Switch Window



Click one of these properties in the table to display the network details on the selected host:

- Name
- IP Address
- Status
- Version
- License
- MAC
- DataCenter Name
- Module
- Number of VMs
- Number of VNICs
- Max Number of VNICs
- Number of MAC Address
- Max Number of MAC Address

Click the **VM Info** tab in the Switch window to display the details on the Virtual Machines. It takes a few seconds to populate the data and the **Loading VM information** message appears at the bottom of the screen. You can choose a VM to display the following details:

- VM

- Adapter
- VNIC
- Status
- MAC
- Port-Profile
- VLANs
- DVPort
- Host ID
- Host IP

Click the **Port Groups** tab in the Switch window to display the port profile information. The port groups data is populated in a few seconds and the **Loading Port Profile information** message appears at the bottom of the screen.

**Note**

If it takes a while to populate the data, you can move away from the tab and navigate to any other tabs in the window.

You can choose a port group to display the following details:

- Mode
- Port Profile
- Type
- VLAN
- System VLANs
- Ports Max
- Ports Min
- Ports Used

Click the **vNICs** tab in the Switch window to display the vNIC information. The vNICs data is populated in a few seconds and the **Loading vNICs information** message appears at the bottom of the screen. You can choose a vNIC to display the following details:

- VM
- Adapter
- VNIC
- Status
- MAC
- Port-Profile
- VLANs

- DVPort
- Host ID
- Host IP

Click the **Uplinks** tab to display the vNIC information. The uplinks data is populated in a few seconds and the **Loading Uplink information** message appears at the bottom of the screen. You can choose a switch interface in the table to display the following details:

- Port
- CDP Switch Name
- CDP Port
- CDP Native LAN
- Status
- Host ID
- CDP Uplink
- VLANs
- PortChannel
- PortChannel Type
- PortChannel Members
- Speed
- MTU
- Packets RX
- Packets TX

Monitoring the Hosts/VEM Window

The Cisco Nexus 1000V plug-in for VMware vCenter server provides the hosts and VEM details to the server administrators. The Cisco Nexus 1000V Hosts/VEM window displays the Virtual Machines (VMs), port groups, vNICs, and vNIC information for each host and VEM that is connected to a particular VSM.

The Hosts/VEM tab displays the following host information in the **System** view:

- Host Name
- NX-OS Version
- Host IP Address
- License
- Host/Module
- VMs/Host
- vNICs/Host

Clicking any of the rows after the **System** view table in the user interface displays a popup window with the details for the selected host. This popup window consists of **VM Info**, **Port Groups**, **vNICs**, and **Uplinks** tabs.

The **VM Info** tab provides the following host details:

- VMs
- VNICs
- Adapter
- Status
- Port Group
- VLANs
- Host ID

The **Port Groups** tab provides the following port details:

- Port Group
- Type
- VLAN
- System VLANs
- Ports Max
- Ports Min
- Ports Used

The **vNICs** tab provides the following VNICs details:

- VNICs
- VMs
- Adapter
- Status
- Port Group
- VLANs
- Host ID

The **Uplinks** tab provides the following uplinks details:

- Switch Interface
- Status
- Port Channel
- Host ID
- Port Group

- VLANs
- CDP Uplink

Viewing the About Window

The About window on the Cisco Nexus 1000V displays the Cisco Nexus 1000V vCenter plug-in version as follows:

- Cisco Nexus 1000V vCenter plug-in
- Version 4.2(1)SV2(2.1)



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