Cisco UCS Director Management Guide for Microsoft System Center Virtual Machine Manager, Release 6.0

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Preface

Audience

This guide is intended primarily for data center administrators who use Cisco UCS Director and who have responsibilities and expertise in one or more of the following:

- Server administration
- Storage administration
- Network administration
- Network security
- Virtualization and virtual machines

Conventions

Text Type	Indication
GUI elements	GUI elements such as tab titles, area names, and field labels appear in **this font**. Main titles such as window, dialog box, and wizard titles appear in **this font**.
Document titles	Document titles appear in *this font*.
TUI elements	In a Text-based User Interface, text the system displays appears in `this font`.

Text Type	Indication
System output	Terminal sessions and information that the system displays appear in `this font`.
CLI commands	CLI command keywords appear in **this font**. Variables in a CLI command appear in *this font*.
[ ]	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.

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

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.

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

Cisco UCS Director Documentation Roadmap

For a complete list of Cisco UCS Director documentation, see the *Cisco UCS Director Documentation Roadmap* available at the following URL: http://www.cisco.com/en/US/docs/unified_computing/ucs/ucs-director/doc-roadmap/b_UCSDirectorDocRoadmap.html.

Cisco 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.

Note The *Cisco UCS B-Series Servers Documentation Roadmap* includes links to documentation for Cisco UCS Manager and Cisco UCS Central. The *Cisco UCS C-Series Servers Documentation Roadmap* includes links to documentation for Cisco Integrated Management Controller.

Documentation Feedback

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

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see What's New in Cisco Product Documentation.

To receive new and revised Cisco technical content directly to your desktop, you can subscribe to the What's New in Cisco Product Documentation RSS feed. RSS feeds are a free service.

CHAPTER 1

New and Changed Information for this Release

New and Changed Information for this Release

No significant changes were made to this guide for the current release.

New and Changed Information for this Release

CHAPTER 2

Overview

This chapter contains the following sections:

About Microsoft System Center Virtual Machine Manager

Microsoft System Center Virtual Machine Manager (SCVMM) 2012 SP1 is a comprehensive IT infrastructure, virtualization, and cloud management platform. With this platform, you can manage your applications and services across multiple hypervisors and across public, hosted, and private cloud infrastructures to deliver flexible and cost-effective IT services. Microsoft SCVMM allows you, as the administrator, to configure and manage the servers, the network, and the storage resources.

Microsoft SCVMM 2012 SP1 introduces the following constructs to model and configure the networks on the Hyper-V servers:

- Logical network—A logical network is used to organize and simplify network assignments for hosts, virtual machines, and services. As logical networks represent an abstraction of the underlying physical network infrastructure, they enable you to model the network based on business needs and connectivity properties.
- Network site—A network site (otherwise known as Logical Network Definitions) is used to define the VLANs and IP subnets that you want to associate with the logical network in each physical location and to control which hosts (in that location) may be configured to support it.
- VM network—VM Networks provide the (network) interface through which a virtual machine (VM) connects to a particular Logical Network.
- IP pool—An IP pool template is used to assign a range of IP addresses to the hosts and to the virtual machines that are running inside the Microsoft SCVMM-managed environment.
- Port profile—A port profile for uplinks (also called an uplink port profile) specifies which logical networks can connect through a particular physical network adapter. A port profile for virtual network adapters specifies capabilities for those adapters and makes it possible for you to control how bandwidth is used on the adapters. The capabilities include offload settings and security settings.

- Port classification—A port classification provides a global name for identifying different types of virtual network adapter port profiles. As a result, a classification can be used across multiple logical switches while the settings for the classification remain specific to each logical switch. For example, you can create one port classification that is named FAST to identify ports that are configured to have more bandwidth, and one port classification that is named SLOW to identify ports that are configured to have less bandwidth. You can use the port classifications that are provided in VMM, or you can create your own port classifications.
- Logical switch—A logical switch is a switch template which contains a set of parameters (for example, switch extensions, uplink port profiles, and port classifications) that you can use to create Hyper-V virtual switches on Windows Server 2012 host computers. A logical switch helps to configure a consistent network policy across many Hyper-V hosts.

About Cisco UCS Director for SCVMM

Cisco UCS Director supports the Microsoft System Center Virtual Machine Manager (SCVMM) environments listed in the Cisco UCS Director Compatibility Matrix.

Cisco UCS Director is integrated with SCVMM through a Windows PowerShell. The PowerShell Agent acts as an interfacing layer between Cisco UCS Director and SCVMM. After you have installed and started the PowerShell Agent, you can manage SCVMM from Cisco UCS Director.

Cisco UCS Director enables you to perform basic SCVMM actions on a virtual machine (VM) such as power-on, power-off, adding disks, removing disks, VM provisioning, and so on. Also, you can manage Server Message Block (SMB) 3.0 file share, Hyper-V host clustered storage, and logical unit numbers (LUNs).

Cisco UCS Director supports the following network models that are defined based on the types of logical networks in SCVMM:

1. VLAN-based network model—Networks that use familiar virtual local area network (VLAN) technology for network isolation can be managed as they are-with one VM network for each network site (and VLAN) in the configuration.
2. Private VLAN-based network model—Private Virtual LANs (PVLANS) are often used by service providers to work around the scale limitations of VLANS. They essentially allow network administrators to divide a VLAN into several separate and isolated subnetworks which can then be allocated to individual customers (tenants). PVLANs share the IP subnet that was allocated to the parent VLAN. However, although hosts connected to different PVLANs still belong to the same IP subnet, they require a router to communicate with each other and with resources on any other network. The network sites within this logical network contain independent networks consisting of primary and secondary VLAN pairs in isolated mode.
3. Network virtualization-based model—Using this network model, you can support multiple tenants (also called as clients or customers) with their own networks, isolated from the networks of other tenants. With this isolation, your tenants can use any IP addresses that they want for their virtual machines, regardless of the IP addresses that are used on other VM networks. Also, you can allow your tenants to configure some aspects of their own networks, based on limits that you specify. Network virtualization abstracts the physical address space and presents a virtual address space to the tenant.

Cisco UCS Director includes orchestration features that allow you to automate configuration and management of Hyper-V in one or more workflows. A complete list of the Hyper-V orchestration tasks is available in the Workflow Designer, and in the Task Library. For more information about orchestration in Cisco UCS Director, see the Cisco UCS Director Orchestration Guide.

CHAPTER 3

Managing SCVMM Infrastructure

This chapter contains the following sections:

Integrating SCVMM

To integrate SCVMM in Cisco UCS Director, perform the following actions:

- Install and configure the PowerShell agent (PSA).
- Add the PSA to Cisco UCS Director.
- Enable WinRM and WinRS on SCVMM and all SCVMM hosts.
- Make sure that the domain account used to connect SCVMM belongs to the local administrator group for SCVMM and SCVMM hosts.
- Ensure that a PowerShell Agent is added to the Hyper-V account when you create a Hyper-V account in Cisco UCS Director.

Configuring a PowerShell ExecutionPolicy Server

Step 1 Verify the current policy by executing Get-Executionpolicy cmdlet from the PowerShell command shell.

```
PS C:\Users\administrator\ Get-ExecutionPolicy Restricted
```

Note Make sure that you choose the correct policy type based on your infrastructure architecture. It is typically unrestricted.

Step 2 Type Set-ExecutionPolicy-ExecutionPolicy ExecutionPolicy unrestricted and press **Enter** to modify an existing execution policy.

```
PS C:\Users\administrator\ Set-ExecutionPolicy -ExecutionPolicy unrestricted
```

```
Execution Policy Change
The execution policy helps protect you from scripts that you do not trust.
Changing the execution policy might expose you to the security risks described in the about
_Execution_Policies help topic.
Do you want to change the execution policy?
[Y] Yes [N} No [S] Suspend [?] Help (default is "Y"): y
```

Enabling WinRM and WinRS

To accept remote PowerShell commands, you must enable Windows Remote Management (WinRM) for Windows Server 2008 R2, 2012 or 2012 R2. Once you enable the WinRM, the interoperability of hardware and operations systems is enabled to work with the Windows Remote Shell (WinRS) command-line tool on your target server and the target server hosts.

Before You Begin

The PowerShell Agent only executes the cmdlets and scripts on the target server in a PowerShell remote session. It requires the WinRM configuration to accept the remote session. This is a Windows PowerShell remote session requirement

Step 1 On your host(s), open a command prompt, and enter winrm quickconfig.

Note Configuring WinRM over HTTP or HTTPS depends on the requirements of the specific environment. HTTPS is only necessary if a secure connection is required. Instructions on configuring HTTPS communication is available at the following URL: https://blogs.technet.microsoft.com/meamcs/2012/02/24/how-to-force-winrm-to-listen-interfaces-over-https/

The following messages appear:

```
WinRM is not set up to allow remote access to this machine for management.
The following changes must be made:

Create a WinRM listener on HTTP://* to accept WS-Man requests to any IP on this machine.
Enable the WinRM firewall exception.

Make these changes [y/n]?
```

Step 2 Enter **y**.

WinRM is updated for remote management, a listener is created to accept requests, and the firewall exception is enabled:

```
Make these changes [y/n]? y

WinRM has been updated for remote management.

Created a WinRM listener on HTTP://* to accept WS-Man requests to any IP on this machine.
WinRM firewall exception enabled.
```

Step 3 Verify that WinRS is enabled by entering the winrm g winrm/config command at a command prompt.

Step 4 Configure the value `" * "` in the TrustedHosts table of WinRM by entering the winrm set winrm/config/client @{TrustedHosts="*"} command.

Note Adding the value " * " to the TrustedHosts table allows all hosts to be trusted or only add specific trusted IP addresses of target servers to the table.

What to Do Next

Make sure that the domain account used to connect the target server belongs to the local administrator group for the target server hosts.

Managing SCVMMs

In Cisco UCS Director, one SCVMM installation is considered as a cloud. Each cloud requires a unique name.

Step 1 On the menu bar, choose **Administration** > **Virtual Accounts**.
The virtual accounts available in Cisco UCS Director are displayed. The **Virtual Accounts** tab provides the following actions:

Action	Description
Refresh	Refreshes the current page.
Favorite	Adds this page to the **Favorites** tab which displays the page that you go to most often.
Add	Adds a virtual account to the Cisco UCS Director.

Step 2 Choose a virtual account to execute the following actions on the account:

Button Name	Description
View	Displays the cloud details.
Edit	Edits a cloud.
Delete	Deletes a cloud after confirmation.
Test Connectivity	Tests the connectivity of Cisco UCS Director to a cloud.
Manage Tag	Adds a tag to the cloud, edit the assigned tag, and delete the tag from the cloud. **Note** The tags that are assigned with the Taggable Entities as virtual accounts when you create a tag are displayed. For more information on the tab library, see Cisco UCS Director Administration Guide.
Add Tags	Adds a tag to the cloud. **Note** The tags that are assigned with the Taggable Entities as virtual accounts when you create a tag are displayed. For more information on the tab library, see Cisco UCS Director Administration Guide.

Button Name	Description
Delete Tags	Deletes one or more tags from the cloud. **Note** The tags that are assigned with the Taggable Entities as virtual accounts when you create a tag are displayed. For more information on the tab library, see Cisco UCS Director Administration Guide.

Adding a Cloud

In Cisco UCS Director, one SCVMM installation is considered as a cloud. Each cloud requires a unique name.

Step 1 On the menu bar, choose **Administration** > **Virtual Accounts**.

Step 2 In the **Virtual Accounts** pane, choose an SCVMM cloud.

Step 3 Click **Add**.

Step 4 In the **Add Cloud** dialog box, complete the following fields:

Name	Description
Cloud Type drop-down list	Choose **Hyper-V** as the cloud type.
Cloud Name field	The name of the cloud. All reports refer to the cloud using this cloud name. **Note** The following special characters are not allowed in cloud name: **.**, **$**,**@**.
User Credential Policy check box	Check this check box to use the policy to assign credentials to the account.
Credential Policy field	This field appears only when the **User Credential Policy** check box is checked. Choose the credential policy.
PowerShell Agent drop-down list	Choose a PowerShell agent for Hyper-V.
Server Address field	The IP address of the SCVMM server.
Server User ID field	This field appears only when the **User Credential Policy** check box is unchecked. The user ID of the SCVMM server.
Server Password field	This field appears only when the **User Credential Policy** check box is unchecked. The password of the SCVMM server.
Domain field	The domain of the SCVMM server.

Name	Description
Description field	The description of the cloud.
Contact Email field	The email address that you can use to contact the administrator or other person responsible for this account.
Location field	The location of this account.
Pod drop-down list	Choose a pod to which this account belongs.
Service Provider field	(Optional) The name of the service provider associated with this account, if any.

Step 5 Click **Add**.

What to Do Next

Test the connectivity to the cloud account.

Testing Cloud Connectivity

Step 1 On the menu bar, choose **Administration** > **Virtual Accounts**.

Step 2 In the **Virtual Accounts** pane, choose an SCVMM cloud.

Step 3 Click **Test Connectivity**.
A connected cloud appears green.

What to Do Next

Verify that the cloud and the cloud data are being collected.

Verifying Cloud Discovery

Step 1 On the menu bar, choose **Virtual** > **Compute**.

Step 2 In the **Compute for All Clouds** pane, choose an SCVMM cloud.
It may take a few minutes to complete automatic discovery and populate all the data. Cisco UCS Director displays a set of tabs that contain information about the components of that account that it has discovered.

Viewing the Topology

You can view the topology of VM network, host network, and cluster network.

Step 1 On the menu bar, choose **Virtual** > **Compute**.

Step 2 In the **Compute** pane, choose an SCVMM cloud.

Step 3 To view the network connectivity of VMs, click the **VM** tab and do the following:

a) Choose a VM and click **View Details**.

b) Click the **VM Network Connectivity** tab.

c) Choose the VM network connectivity and click **View Connectivity**.
The **Topology View - VM Network Connectivity** dialog box is displayed with a view of the topology and connectivity of the devices in the VM.

d) If desired, you can modify the following view options:

- **View Mode** drop-down list—Adjusts the spacing and positioning of the devices. The mode determines which options are available for you to customize the topology view. You can choose between the following view modes:
  - **Hierarchical**
  - **Concentric**
  - **Circular**
  - **Force Directed**
- **Allow Item Spacing** check box—Increases the distance between devices for the Hierarchical view mode.
- **Distance** control—Adjusts the distance between devices for the Concentric view mode.
- **Radius** control—Changes the radius of the circle and therefore adjusts the distance between devices for the Circular view mode.
- **Rigidity** control—Adjusts the rigidity for the Force Directed view.
- **Force Distance** control—Adjusts the distance between devices for the Force Directed view.

e) Click **Close** to return to the **VM Network Connectivity** tab.

f) Click **Back**.

Step 4 To view the network connectivity of cluster network, click the **Clusters** tab and do the following:

a) Choose a cluster and click **View Details**.

b) Click the **Cluster Network Connectivity** tab.

c) Choose the network connectivity and click **View Connectivity**.
The **Topology View - Cluster Network Connectivity** dialog box is displayed with a view of the topology and connectivity of the devices in the cluster network.

d) If desired, you can modify the following view options:

- **View Mode** drop-down list—Adjusts the spacing and positioning of the devices. The mode determines which options are available for you to customize the topology view. You can choose between the following view modes:
  - **Hierarchical**
  - **Concentric**
  - **Circular**
  - **Force Directed**
- **Allow Item Spacing** check box—Increases the distance between devices for the Hierarchical view mode.
- **Distance** control—Adjusts the distance between devices for the Concentric view mode.
- **Radius** control—Changes the radius of the circle and therefore adjusts the distance between devices for the Circular view mode.
- **Rigidity** control—Adjusts the rigidity for the Force Directed view.
- **Force Distance** control—Adjusts the distance between devices for the Force Directed view.

e) Click **Close** to return to the **Cluster Network Connectivity** tab.
f) Click **Back**.

Step 5 To view the network connectivity of host, click the **Host Nodes** tab and do the following:

a) Choose a host node and click **View Details**.
b) Click the **Host Network Topology** tab.
c) Choose the host network topology and click **View Connectivity**.
The **Topology View - Cluster Network Connectivity** dialog box is displayed with a view of the topology and connectivity of the devices in the cluster network.
d) If desired, you can modify the following view options:
- **View Mode** drop-down list—Adjusts the spacing and positioning of the devices. The mode determines which options are available for you to customize the topology view. You can choose between the following view modes:
  - **Hierarchical**
  - **Concentric**
  - **Circular**
  - **Force Directed**
- **Allow Item Spacing** check box—Increases the distance between devices for the Hierarchical view mode.
- **Distance** control—Adjusts the distance between devices for the Concentric view mode.
- **Radius** control—Changes the radius of the circle and therefore adjusts the distance between devices for the Circular view mode.
- **Rigidity** control—Adjusts the rigidity for the Force Directed view.
- **Force Distance** control—Adjusts the distance between devices for the Force Directed view.

e) Click **Close** to return to the **Host Network Topology** tab.
f) Click **Back**.

CHAPTER 4

Managing Policies

This chapter contains the following sections:

About Policies

A policy is a set of rules that determines where and how a new virtual machine (VM) is provisioned within the infrastructure, based on the availability of system resources.

Cisco UCS Director requires four policies to be set up in order to provision VMs. For SCVMM integration, these are the Hyper-V policies for compute, storage, network, and deployment.

In addition, there are service delivery policies for cost models and for OS license.

About Service Delivery

For SCVMM integration, you create the following service delivery information:

- Cost models
- OS licenses
- Hyper-V deployment policy

Click tabs in **Policies** > **Virtual/Hypervisor Policies** > **Service Delivery** to perform these tasks.

Managing Cost Models

For simplified accounting, you can define a cost model. A group's infrastructure resources can be accounted for based on its cost model.

You combine the supported infrastructure resource costs (CPU, memory, and storage) with VM costs to determine the total cost of a VM lifecycle.

For a cost model, you define costs such as the following:

- One-time provisioning cost
- Active and inactive VM costs
- Provisioned, reserved, and used CPU costs
- Provisioned memory cost

Step 1 On the menu bar, choose **Policies** > **Virtual/Hypervisor Polices** > **Service Delivery**.

Step 2 Click the **Cost Model** tab.
The cost models in the Cisco UCS Director are displayed. The **Cost Model** tab provides the following actions:

Action	Description
Refresh	Refreshes the current page.
Favorite	Adds this page to the **Favorites** tab which displays the page that you go to most often.
Add	Adds a new cost model in the Cisco UCS Director.

When you choose a cost model, the following actions appear:

Button Name	Description
View	Displays a cost model.
Edit	Edits a cost model.
Delete	Deletes a cost model.
Clone	Clones a cost model.

Adding a Cost Model

Step 1 Navigate to the **Cost Model** tab.
For more information about how to navigate to the **Cost Model** tab, see Managing Cost Models, on page 13.

Step 2 Click **Add**.

Step 3 In the **Add Cost Model** dialog box, complete the following fields:

Name	Description
Cost Model Name field	The cost model name.
Cost Model Description field	The cost model description.
Cost Model Type drop-down list	Choose **HyperV** as the cost model type.
Charge Duration drop-down list	Choose the **Hourly**, **Daily**, **Weekly**, **Monthly**, or **Yearly** as the change frequency. **Note** The remaining fields in this dialog box are all defined on an hourly basis.
Fixed Costs	
One Time Cost field	The fixed one-time cost for provisioning the VM.
VM Costs	
Active VM Cost field	The hourly cost of a VM in the active state.
Inactive VM Cost drop-down list	The hourly cost of a VM in the inactive state.
CPU Costs	
CPU Charge Unit drop-down list	Choose the **GHz** or **Cores** as the CPU charge unit.
Provisioned CPU Cost field	The hourly provisioned CPU cost per CPU charge unit (GHz). The cost is applicable for active VMs.
Used CPU Cost field	The hourly used CPU cost, based on actual CPU usage. The cost is applicable for active VMs. **Note** This cost does not include provisioned and reserved cost. If you enter a value in **Used CPU Cost**, leave the provisioned cost and reserved cost fields empty. If you have specified the provisioned cost and reserved cost, leave the used CPU cost empty.
CPU Core Cost field	The hourly CPU cost per core allocated to a VM.
Memory Costs	
Provisioned Memory Cost field	The hourly provisioned memory cost per GB. The cost is applicable for active VMs. **Note** The memory cost is calculated in the same manner as CPU cost.
Used Memory Cost field	The hourly reserved memory cost per GB. The cost is applicable for active VMs.
Storage Costs	

Name	Description
Committed Storage Cost field	The hourly committed storage cost per GB for both the active and inactive VMs.
Used Storage Cost field	The hourly reserved storage cost per GB for both the active and inactive VMs.

Step 4 Click **Add**.

Managing OS License Details

You can add Windows OS license key data using the **OS License** tab. These license keys are the ones used in VM provisioning, and are mapped to Windows VM images during the creation of a catalog.

Note If you entered Windows license key information in the **HyperV System Policy**, the license key entered on the **OS License** tab overrides that value.

Step 1 On the menu bar, choose **Policies** > **Virtual/Hypervisor Policies** > **Service Delivery**.

Step 2 Click the **OS License** tab.
The OS Licenses in the Cisco UCS Director are displayed. The **OS License** tab provides the following actions:

Action	Description
Refresh	Refreshes the current page.
Favorite	Adds this page to the **Favorites** tab which displays the page that you go to most often.
Add	Adds an OS license in the Cisco UCS Director.

When you choose an OS license, the following actions appear:

Button Name	Description
View	Displays an OS license.
Edit	Edits an OS license.
Delete	Deletes an OS license after confirmation.
Clone	Clones an OS license.

Adding OS License Details

Step 1 Navigate to the **OS License** tab.
For more information about how to navigate to the **OS License** tab, see #unique_30.

Step 2 Click **Add**.

Step 3 In the **Add License Details** dialog box, complete the following fields:

Name	Description
Windows Version Name field	The Windows version name.
License field	The Windows product ID/license key. **Note** Key Management Service (KMS) client setup keys are also accepted.
License Owner Name field	The name of the Windows license owner.
Organization field	The organization to be configured in the VM.
License Mode drop-down list	Choose **Per-Seat** or **Per-Server** as the license mode.
Number of licensed Users field	The number of licensed users or connections.

Step 4 Click **Submit**.

Managing Hyper-V Deployment Policies

The HyperV deployment policy defines system-specific information, such as the following:

- VM name template for the automatic creation of VM names
- Host name template
- VM image type
- OS license pool product ID
- Time zone for the deployment that uses the policy

- Domain and/or workgroup to be used for deployment with this policy

Step 1 On the menu bar, choose **Policies** > **Virtual/Hypervisor Policies** > **Service Delivery**.

Step 2 Scroll across the tabs to find and click the **HyperV Deployment Policy** tab.
The Hyper-V deployment policies in the Cisco UCS Director are displayed. The **HyperV Deployment Policy** tab provides the following actions:

Action	Description
Refresh	Refreshes the current page.
Favorite	Adds this page to the **Favorites** tab which displays the page that you go to most often.
Add	Adds a Hyper-V deployment policy.

When you choose an OS license, the following actions appear:

Button Name	Description
View	Displays a Hyper-V deployment policy.
Edit	Edits a Hyper-V deployment policy.
Delete	Deletes a Hyper-V deployment policy.
Clone	Clones a Hyper-V deployment policy.

Managing Hyper-V Deployment Policies

The HyperV deployment policy defines system-specific information, such as the following:

- VM name template for the automatic creation of VM names
- Host name template
- VM image type
- OS license pool product ID
- Time zone for the deployment that uses the policy

- Domain and/or workgroup to be used for deployment with this policy

Step 1 On the menu bar, choose **Policies** > **Virtual/Hypervisor Policies** > **Service Delivery**.

Step 2 Scroll across the tabs to find and click the **HyperV Deployment Policy** tab.
The Hyper-V deployment policies in the Cisco UCS Director are displayed. The **HyperV Deployment Policy** tab provides the following actions:

Action	Description
Refresh	Refreshes the current page.
Favorite	Adds this page to the **Favorites** tab which displays the page that you go to most often.
Add	Adds a Hyper-V deployment policy.

When you choose an OS license, the following actions appear:

Button Name	Description
View	Displays a Hyper-V deployment policy.
Edit	Edits a Hyper-V deployment policy.
Delete	Deletes a Hyper-V deployment policy.
Clone	Clones a Hyper-V deployment policy.

Adding a Hyper-V Deployment Policy

Step 1 On the menu bar, choose **Policies** > **Virtual/Hypervisor Policies** > **Service Delivery**.

Step 2 Click the **HyperV Deployment Policy** tab.

Step 3 Click **Add**.

Step 4 In the **Add Policy** dialog box, complete the following fields:

Name	Description
Policy Name field	The name for the Hyper-V deployment policy.
Policy Description field	The description of the Hyper-V deployment policy.

Name	Description
Power On after deploy check box	Check if you want all VMs deployed using this policy to be automatically powered on.
VM Name Template field	The VM name template for generating VM names, declared in the format ${VARIABLE}. For example: vm-${GROUP_NAME}-SR${SR_ID}. The following variable names are permitted: • CLOUD_NAME—The name of the cloud that is being deployed. • GROUP_NAME—The name of the group the VM belongs to. • CATALOG_NAME—The name of the catalog item or entry. • USER—The requesting user ID. • SR_ID—The service request ID. • COMMENTS—The requesting user's comments. • PROFILE_NAME—The name of the policy. • LOCATION—The name of the location, as specified during cloud creation. • UNIQUE_ID—A random-ID that makes the name unique. • APPCODE—The application code value specified during catalog creation. • COST_CENTER—The cost center a group or customer organization is associated with that is specified during group or customer organization creation. **Note** You can append the # character to the **VM Name Template** to create a unique index number for the **VM Name**. It can be specified in multiples. For example, if the VM name template is **vm-${GROUP_NAME}##,** the VM Name is **vm-ABCD01** for the first VM provisioned with this policy (the group name is ABCD and 01 represents ##).
Recycle VM Name check box	By default, decommissioned VM names that were previously provisioned are used when creating a new VM. Uncheck if you do not want to recycle previously used VM names.
End User VM Name or VM Prefix check box	Check if you want to add the VM prefix specified by the end user in the custom specification page of the service request during VM provisioning.

Name	Description
Host Name Template field	The host name template for generating host names, declared in the format ${VARIABLE}. For example: host-${GROUP_NAME}-SR${SR_ID}. The following variable names are permitted: • CLOUD_NAME—The name of the cloud that is being deployed. • GROUP_NAME—The name of the group the VM belongs to. • CATALOG_NAME—The name of the catalog item or entry. • USER—The requesting user ID. • SR_ID—The service request ID. • COMMENTS—The requesting user's comments. • PROFILE_NAME—The name of the policy. • LOCATION—The name of the location, as specified during cloud creation. • UNIQUE_ID—A random-ID that makes the name unique. • APPCODE—The application code value specified during catalog creation. • COST_CENTER—The cost center a group or customer organization is associated with that is specified during group or customer organization creation. **Note** The # character can be appended to the **Host Name Template** to create a unique index number for the **Host Name**. It can be specified in multiples. **Note** Hostname is limited to 15 characters and must compliance with Windows NetBIOS limitations. This limitation is applicable for both Windows and Linux VMs.
Recycle Host Name check box	By default, host names from a decommissioned VM that was previously provisioned are used when creating a new host. Uncheck if you do not want to recycle previously used host names.
End User Host Name or Host Prefix check box	Check if you want to add the host prefix specified by the end user in the custom specification page of the service request during host provisioning.
Time Zone drop-down list	Choose the **Time Zone** for VMs using this policy.
GUI Run Once Commands field	The command to execute inside the VM after the VMs using this policy are provisioned. For example: `cmd.exe/c md c:\newfolder`.
VM Image Type drop-down list	By default, **Windows and Linux** appears as the VM image type. If you choose **Linux Only**, a new **Add Policy** dialog box appears. For a Linux only VM image, complete the required fields.

Name	Description
Linux Parameters	
Root Password field	The root password of the Linux machine.
DNS Domain Name field	The name of the DNS domain.
Windows Parameters	
Product ID field	The Windows product ID or license key. **Note** If this value does not match the value in your OS License Pool, that value overrides the key provided here.
Administrator Password field	The administrator password for the template.
Organization Name field	The organization name to be configured with the VM operating system.
Full Name field	The full name of the organization.
Domain/Workgroup drop-down list	Choose either **Workgroup** or **Domain**. If you choose **Domain**, complete the required fields.
Workgroup field	The workgroup name.

Step 5 For a **Linux Only** VM image, complete the following fields:

Name	Description
Policy Name field	The name for the Hyper-V deployment policy.
Policy Description field	The description of the Hyper-V deployment policy.
Power On after deploy check box	Check this check box if you want VMs to be automatically powered on after deployment.
VM Name Template field	The VM name template.
Host Name Template field	The host name template.
Time Zone drop-down list	Choose the **Time Zone** for VMs using this policy.
GUI Run Once Commands field	The command to execute inside the VM after the VMs using this policy are provisioned. For example: `cmd.exe/c md c:\newfolder`.
VM Image Type drop-down list	Choose **Linux Only**.

Name	Description
Root Password field	The root password of the Linux machine.
DNS Domain Name field	The name of the DNS domain.

Step 6 When you choose **Domain**, complete the following fields:

Name	Description
Domain field	The domain name.
Domain Username field	The domain user name. The format of the user name is domain\username.
Domain Password field	The domain password.

Step 7 Click **Submit**.

Adding a Hyper-V Computing Policy

Step 1 On the menu bar, choose **Policies** > **Virtual/Hypervisor Policies** > **Computing**.

Step 2 Click the **HyperV Computing Policy** tab.

Step 3 Click **Add**.

Step 4 In the **Add Policy** dialog box, complete the following fields.

Note Fields may vary depending on the version of SCVMM cloud selected.

Name	Description
Policy Name field	The policy name.
Policy Description field	The policy description.
Cloud Name drop-down list	Choose the cloud name.
Host Node/Cluster Scope drop-down list	If you want to narrow the scope of the host node, choose another option. The default is **All**.
Selected Host Nodes field	This field appears when you choose to include or exclude hosts in the **Host Node/Cluster Scope** drop-down list. Click **Select** and choose host nodes to include or exclude.

Name	Description
Associate SCVMM Cloud drop-down list	Changes the resource allocation, based on SCVMM cloud selected.
Allow Migration to Different CPU Type check box	Check this check box to allow migration of the provisioned VM to a different CPU type. Leave unchecked if you want to disallow migration.
Enable High Availability check box	Check this check box to enable high availability. **Note** This option is required to deploy a VM on cluster resources. Make sure to select the cluster CSVs in the storage policy and common virtual switch available on cluster.
Filter Conditions check boxes	Check the conditions that apply. Any hosts that do not meet these criteria are excluded. For each selected **Minimum Condition**, choose the boolean operators and enter the condition value in the respective text field. **Note** If more than one condition is selected, all selected conditions must match.
Deployment Options	
Override Template check box	Check this check box if you want to override the template properties during deployment. If checked, complete the required fields.
Resizing Options	
Allow Resizing of VM check box	Check this check box if you want to allow VMs to be resized before or after provisioning. If checked, complete the required fields.

Step 5 To override the template, complete the following fields:

Name	Description
Number of vCPUs field	The number of vCPUs.
Enable Dynamic Memory check box	Check this check box to enable dynamic memory.
Memory (MB) field	The memory to be allocated.

Step 6 To allow VM resizing, complete the following fields:

Name	Description
Permitted values for vCPUs field	The permitted individual values for vCPUs.

Name	Description
Permitted values for Memory in MB field	The permitted individual values for memory (MB)
Permitted values for Startup Memory field	The permitted individual values for startup memory (MB)
Permitted values for Maximum Memory in MB field	The permitted individual values for maximum memory (MB)
Permitted values for Memory Buffer (%) field	The permitted individual values for the memory buffer (percentages)

Step 7 Click **Submit**.

Adding a Hyper-V Network Policy

The network policy enables virtual network types to be defined and made available on host nodes.

You can also specify the following:

- Adapter types to assign for provisioned VMs
- Enablement of VLAN
- Extension of the policy to cover multiple vNICs

Step 1 On the menu bar, choose **Policies** > **Virtual/Hypervisor Policies** > **Network**.

Step 2 Scroll across the tabs to find and click the **Hyper-V Networking Policy** tab.

Step 3 Click **Add**.

Step 4 In the **Network Policy Information** dialog box, complete the following fields.

Name	Description
Policy Name field	The policy name.
Policy Description field	The policy description.
Cloud Name drop-down list	Choose the cloud name.
Allow end user to select optional NICs check box	Check this check box to allow end users to select optional NICs.
VM NIC(s) field	The list of VM NICs that are added to the network policy. Click the + icon to add a VM NIC.

Step 5 To add a VM NIC to the network policy, in the **Add Entry to VM NICs** dialog box, complete the following fields:

Name	Description
NIC Alias field	The name of the NIC alias of the VM network.
Mandatory check box	This check box is enabled when you check the **Allow end user to select optional NICs** check box. If you want to make the NIC alias as mandatory, check this check box.
Allow end user to choose VM Networks check box	Check this check box to allow end users to choose VM networks during VM provisioning.
Adapter Type drop-down list	Choose **SYNTHETIC** or **EMULATED** as the adapter type.
VM Networks field	The list of VM networks that are added to the NIC alias. Click the + icon to add a VM network.

Step 6 To add a VM network to the network policy, in the **Add Entry to VM Networks** dialog box, complete the following fields:

Name	Description
Network Name field	Click **Select** and choose a network.
Fields in the **Add Entry to VM Networks** dialog box vary depending on the network model selected in the **Network Name** field.	
Subnet drop-down list	This field appears when you choose an external network or a virtualization-based VM network. Choose a subnet from the drop-down list.
VLAN ID drop-down list	This field appears when you choose virtualization-based network without isolation. Choose a VLAN ID from the drop-down list.
Enable MAC Spoofing check box	Check this check box to enable changing of a factory-assigned MAC address on a NIC.
Use DHCP check box	Check this check box to use the DHCP server to assign dynamic IP addresses to devices on a network
Static IP Pool drop-down list	This field appears when the **Use DHCP** check box is unchecked. Choose the static IP pool from a list of IP pools in SCVMM.
Port Classification drop-down list	(Optional) Choose a port classification from the list of port classifications displayed based on the selected network.

Step 7 Click **Submit**.

Adding a Hyper-V Storage Policy

Step 1 On the menu bar, choose **Policies** > **Virtual/Hypervisor Policies** > **Storage**.

Step 2 Click the **HyperV Storage Policy** tab.

Step 3 Click **Add**.

Step 4 In the **Add Policy** dialog box, complete the following fields.

Note Fields may vary depending on the version of SCVMM cloud selected.

Name	Description
Policy Name field	The storage policy name.
Policy Description field	The storage policy description.
Cloud Name drop-down list	Choose the SCVMM cloud name.
Scope	
Data Stores Scope drop-down list	If you want to narrow the scope of the data stores, choose another option. The default is **All**.
Selected Data Stores	This field appears when you choose to include or exclude data store in the **Data Stores Scope** drop-down list. Click **Select** and choose data stores to include or exclude.
Use CSV check box	Check this check box if you want to use CSV. **Note** Using CSV is mandatory if deploying the VM on cluster resources.
Storage Options	
Use Local Storage check box	Check this check box if you want to use local storage.
Use SAN check box	Check this check box if you want to use storage area network (SAN).
Use SMB check box	Check this check box if you want to use server message block (SMB).
Minimum Conditions check boxes	Check the conditions that apply. Any data stores that do not meet these criteria are excluded. For each selected **Minimum Condition**, choose the boolean operators and enter the condition value in the respective text field. **Note** If more than one condition is selected, all selected conditions must match.

Name	Description
Deployment Options	
Override Template check box	Check this check box if you want to override the template properties during deployment. If checked, complete the required fields.
Resizing Options for VM Lifecycle	
Allow Resizing of Disk check box	Check this check box to allow disk to be resized during the disk lifecycle.
Permitted Values for Disk in GB field	This field appears when you check the **Allow Resizing of Disk** check box. The permitted values for disk in GB.
Allow user to select datastores from scope check box	Check this check box to allow users to select datastores from scope.

Step 5 To override the template, complete the following fields:

Name	Description
Use Dynamic Provisioning check box	Check this check box to enable dynamic memory.
Custom Disk Size (GB) field	The custom disk size to be allocated.

Step 6 Click **Submit**.

CHAPTER 5

Managing Virtual Data Centers

This chapter contains the following sections:

About Virtual Data Centers

A Virtual Data Center (vDC) is an environment that combines virtual resources, operational details, rules, and policies to manage specific group requirements.

In Cisco UCS Director, a group can have and manage multiple virtual data centers. The system administrator can allocate quotas and assign resource limits for individual groups at the vDC level.

You can also define approvers for a vDC. This person approves user requests for VM provisioning in the vDC.

Note There is a default vDC to which all discovered VMs are automatically added. These discovered VMs were either created outside of Cisco UCS Director, or existed on the SCVMM account before it was added to Cisco UCS Director.

Managing Virtual Data Centers

Step 1 On the menu bar, choose **Policies** > **Virtual/Hypervisor Policies** > **Virtual Data Centers**.

Step 2 Click the **vDC** tab.

The vDCs in the Cisco UCS Director are displayed. The **vDC** tab provides the following actions:

Action	Description
Refresh	Refreshes the current page.

Action	Description
Favorite	Adds this page to the **Favorites** tab which displays the page that you go to most often.
Add	Creates a vDC in the Cisco UCS Director.
vDC Creation Wizard	Provides wizard to configure the policies required to provision a VM on private clouds.

When you choose a vDC, the following actions appear:

Action	Description
View	Displays the vDC details.
Edit	Edits a vDC.
Delete	Deletes a vDC after confirmation.
Clone	Clones a vDC.
Manage Categories	Displays categories defined in the vDC.
Validate	Validates the vDC.

Adding a Virtual Data Center

When completing a service request for VM provisioning, users can view a list of available vDCs for a particular group, and select the appropriate vDC.

A VM provisioned using a service request is associated with the vDC.

Step 1 On the menu bar, choose **Policies** > **Virtual/Hypervisor Policies** > **Virtual Data Centers**.

Step 2 Click the **vDC** tab.

Step 3 Click **Add**.

Step 4 In the **Add vDC** dialog box, complete the following fields:

Name	Description
Account Type drop-down list	Choose **HyperV** and click **Submit**.

Name	Description
General Information	
vDC Name field	The vDC name.
vDC Locked check box	Check this check box if you want to lock this vDC. If checked, this vDC cannot be used for any further deployments. Actions on existing VMs in the vDC are disabled.
vDC Description field	The vDC description.
Group drop-down list	Choose a group for which this vDC is being created, or click the + icon to add a new group to the selection list.
Cloud Name drop-down list	Choose a cloud (SCVMM account) on which you wan to create the VDC.
Approvers and Contacts	
First Approver Username field	(Optional) The first approver of the service request created using this vDC.
Second Approver Username field	(Optional) The second approver of the service request created using this vDC.
Approval required from all the users check box	Check this check box if the approval is required from all the users of the vDC.
Number of Approval Request reminders field	The number of reminder emails to be sent to the approvers. **Note** Enter **0** to send reminder emails periodically until the request is approved or rejected.
Reminder Intervals (Hours) field	The number of reminder emails to be sent to the approvers.
Provider Support Email Address field	The contact user's email address. This user is notified about VM provisioning in this vDC.
Copy Notifications to Email Address field	(Optional) The secondary contact user's email address. This user is notified about VM provisioning in this vDC.
Policies	
Computing Policy drop-down list	Choose a Hyper-V computing policy for the vDC.
Network Policy drop-down list	Choose a Hyper-V network policy for the vDC.
Storage Policy drop-down list	Choose a Hyper-V storage policy for the vDC.
Deploy Policy drop-down list	Choose a Hyper-V deployment policy for the vDC.
Cost Model drop-down list	Choose a cost model for the vDC.

Name	Description
Disable displaying cost in the SR summary and email page check box	Check this check box to avoid displaying the cost model in the service request summary and email page.
User Action drop-down list	Choose a user action policy for the vDC.
End User Self-Service Policy drop-down list	Choose an end user self-service policy for the vDC.

Step 5 Click **Add**.

CHAPTER 6

Publishing Catalogs

This chapter contains the following sections:

Publishing Catalogs

You can create a catalog item which define VM binding parameters such as cloud name and group name. Users can provision VMs using these predefined catalog items.

To aid in managing catalogs, Cisco UCS Director allows you to group similar catalogs within a folder. While creating a catalog, you can select a specific folder, which has been created earlier on. Optionally, you can create a new folder for the catalog. A folder is visible only when it contains a catalog.

Important If you have upgraded Cisco UCS Director to the latest version, then all catalogs created in prior versions are grouped into the folders available by default, based on the catalog type.

Managing Catalogs

Step 1 On the menu bar, choose **Policies** > **Catalogs**.
The catalogs available in Cisco UCS Director are displayed. The **Catalogs** tab provides the following actions:

Button Name	Description
Refresh	Refreshes the current page.
Favorite	Adds this page to the **Favorites** tab which displays the page that you go to most often.

Button Name	Description
Add	Adds a catalog.
Manage Folder	Manages the catalog folder.

Step 2 Choose a catalog after expanding a folder to execute the following actions on the catalog:

Button Name	Description
Edit	Edits a catalog.
View	Displays the catalog details.
Delete	Deletes a catalog after confirmation.
Clone	Clones a catalog. A cloned catalog requires a new name. Edit any properties of the cloned catalog, as needed.
Deployability Assessment	Provides the deployability assessment that includes the deployable hosts and the reason for excluded hosts.
Move Up	Organizes the catalog folder.
Move Down	Organizes the catalog folder.

Creating a Catalog

When you add a catalog, you can select the groups permitted to provision new VMs with it, and provide other basic information. The chosen application category determines which policies the vDC applies when the service is provided.

For Windows images, there are options for VM user credential access. User credentials for the VM in a template can be shared with other users, or reset before sharing. If shared, a user can retrieve credentials for the active VM.

Step 1 On the menu bar, choose **Policies** > **Catalog**.

Step 2 Click **Add**.

Step 3 In the **Add Catalog** dialog box, complete the following fields:

Name	Description
Catalog Type drop-down menu	Choose **Standard** as the catalog type.

Step 4 Click **Submit**.

Step 5 In the **Basic Information** pane of the **Add Catalog** dialog box, complete the following fields:

Name	Description
Catalog Name field	The name of the catalog.
Catalog Description field	The catalog description.
Catalog Type drop-down list	Displays the catalog type.
Catalog Icon drop-down list	Choose an icon for the catalog.
Applied to all groups check box	Check the check box if you want all groups to use the catalog item to provision new VMs.
Selected Groups field	If the catalog applies only to selected groups, click **Select** and choose one or more groups.
Cloud Name drop-down list	Choose the cloud.
Image drop-down list	Choose the image that is applied when VMs are provisioned using this catalog item.
Windows License Pool field	This field appears when you choose Windows image in the **Image** drop-down list. Choose the OS license to use for the selected Windows image.
Roles field	Click **Select** and choose one or more roles to install on the server.
Features field	Click **Select** and choose one or more features to install on the server.
Select Folder drop-down list	Choose a folder for the catalog. To create a custom folder name, click the + icon.

Step 6 Click **Next**.

Step 7 In the **Application Details** pane, complete the following fields:

Name	Description
Category Name drop-down list	Choose a category for vDC.
Support Contact Email Address field	The user to notify when a service request is created using this catalog item.

Name	Description
Specify OS drop-down list	Choose the OS type to be installed on the provisioned VM.
Specify Other OS field	Enter an OS that is not in the **Specify OS** drop-down list, if necessary.
Specify Applications field	Choose the applications to install on the VM when provisioning.
Specify Other Applications field	Enter applications that are not in the **Specify Applications** drop-down list, as required.
Application Code field	Enter a four-digit application code for use in the VM name.

Step 8 Click **Next**.

Step 9 In the **User Credentials** pane, complete the following fields (Windows image only):

Name	Description
Credential Options drop-down list	Choose whether to share user credentials for the VM template. If sharing is chosen, enter the user ID and password. **Note** For Windows 7 templates, the administrator has to provide the user ID because of rules on SCVMM guest customization.

Step 10 Click **Next**.

Step 11 In the **Customization** pane, complete the following fields:

Name	Description
Automatic Guest Customization	
Enable check box	Check this check box if you want to enable automatic guest customization. For Windows images, this option is enabled by default. **Note** This option is disabled for Linux templates.
Post-Provisioning Custom Actions	
Enable check box	Check this check box if you want to enable a postprovisioning orchestration workflow.
Virtual Storage Catalog	
Enable check box	Check this check box if you want to enable a virtual storage catalog.
Cost Computation	
VM App Charge Frequency drop-down list	Choose the application charge frequency.

Name	Description
Active VM Application Cost USD field	Enter the aggregate cost for active VMs.
Inactive VM Application Cost USD field	Enter the aggregate cost for inactive VMs.

Step 12 Click **Next**.

Step 13 In the **VM Access** pane, complete the following fields:

Name	Description
Web Access Configuration	
Enable check box	Check this check box if you want to enable web access to the VM.
URL field	This field appears when you check the **Enable** check box. Enter the URL of the VM.
Label field	This field appears when you check the **Enable** check box. Enter the label for the VM.
Remote Desktop Access Configuration	
Enable check box	Check this check box if you want to enable remote desktop access to the VM.
Server field	This field appears when you check the **Enable** check box. Enter the IP address of the server for remote access.
Port field	This field appears when you check the **Enable** check box. Enter the port number of the server for remote access.
Label field	This field appears when you check the **Enable** check box. Enter any label for this remote type of remote access.

Step 14 Click **Next**.

Step 15 In the **Summary** pane, review and make any necessary changes.

Step 16 Click **Submit**.

CHAPTER 7

Managing the VM Lifecycle

This chapter contains the following sections:

Managing the VM Lifecycle

You can perform post-provisioning lifecycle management actions on virtual machines (VMs).

These actions are broadly classified into four categories:

- VM power management—Power on, power off, pause, resume, shutdown guest, standby, reset, and reboot a VM.
- VM resizing—Resize a VM and resize a VM disk.
- VM snapshot management—Create a snapshot, revert a snapshot, mark a snapshot as golden, delete a snapshot, and delete all snapshots.
- Other VM actions—Create a VM disk, delete a VM disk, repair a VM, add a vNIC, delete a vNIC, save the state of a VM, discard the saved state of a VM, view the VM details, stack view of a VM, assign a VM, assign VM credentials, launch a VM client, and request for inventory collection.

Step 1 On the menu bar, choose **Virtual** > **Compute**.

Step 2 Expand **All Clouds** and choose an SCVMM cloud.

Step 3 Click the **VMs** tab.

Step 4 To perform an action on a VM, choose a VM and do one of the following:

- Click an action such as assign VM, launch VM client, that appears on top of the VMs table.
- Click the drop-down icon at the top right corner of the VMs table and choose an action.
- Right-click the VM and choose an action from the drop-down menu.

Managing VM Power

You can manage the power functions on VM that includes actions such as power on, power off, suspend power, reset, or reboot the VM.

Step 1 On the menu bar, choose **Virtual** > **Compute**.

Step 2 Expand **All Clouds** and choose an SCVMM cloud.

Step 3 Click the **VMs** tab.

Step 4 From the drop-down icon at the top right corner of the VMs table, choose an action.
The following actions appear according to the power state of the VM.

Action	Description
Power On	Powers on the VM.
Power Off	Power off the VM.
Suspend	Places the VM in a suspended state.
Shutdown Guest	Shuts down the Guest OS on the VM.
Reset	Performs a hard reset of the VM.

Step 5 In the **VM Task** dialog box that appears when you choose an action, complete the following fields:

Name	Description
VM Name field	The name of the VM.
Task field	Displays the selected power management task.
Comments field	Enter comments if necessary.

Name	Description
Schedule Action radio button	Click one of the following options: • **Execute Now—**Applies the action on the VM immediately. • **Execute Later—**Applies the action on the VM at the specified date and time.

Step 6 Click **Proceed**.

Resizing a VM

You can modify the CPU count and memory for a VM, and optionally choose to enable dynamic memory.

Step 1 On the menu bar, choose **Virtual** > **Compute**.

Step 2 Expand **All Clouds** and choose an SCVMM cloud.

Step 3 Click the **VMs** tab.

Step 4 Choose the VM that you want to resize.

Note The VM must be powered off. If the VM is in the on state, turn off the power of the VM using the **Power Off** action.

Step 5 Click **Resize VM**.

Step 6 In the **Resize VM** dialog box, complete the following fields:

Name	Description
VM Name field	The name of the VM.
Current Allocated CPU field	The current CPU on the VM.
Dynamic Memory field	Displays the enable status of the dynamic memory on the VM.
Current Allocated Memory (GB) field	Displays the current memory on the VM.
New CPU Count drop-down list	Choose the new CPU count.
Enable Dynamic Memorycheck box	Check the check box if you want to enable dynamic memory.
New Memory drop-down list	This field appears when the **Enable Dynamic Memory** check box is unchecked. Choose the new memory allocation.

Name	Description
New Startup Memory field	This field appears when the **Enable Dynamic Memory** check box is checked. The new startup memory allocation.
New Maximum Memory (MB) field	This field appears when the **Enable Dynamic Memory** check box is checked. The new maximum memory allocation.
New Memory Buffer(%) field	This field appears when the **Enable Dynamic Memory** check box is checked. The new memory buffer allocation, specified as a percentage. This is the memory Hyper-V attempts to assign to the VM, compared to the amount of memory needed by the applications and services running inside it.

Step 7 Click **Resize**.

Resizing a VM Disk

Step 1 On the menu bar, choose **Virtual** > **Compute**.

Step 2 Expand **All Clouds** and choose an SCVMM cloud.

Step 3 Click the **VMs** tab.

Step 4 Choose the VM that you want to resize.

Note The VM must be in the power off status. If the VM is in the on status, turn off the power of the VM using the **Power Off** action.

Step 5 From the drop-down icon at the top right corner of the VM's table, choose **VM Disk Resize**.

Step 6 In the **Resize VM Disk** dialog box, complete the following fields:

Name	Description
VM Name field	The name of the VM.
Select Disk drop-down list	Choose the disk to resize.
Total Provisioned (GB) field	The total provisioned disk size in gigabytes.
New Size(GB) field	The new disk size in gigabytes.

Step 7 Click **Resize**.

Managing VM Snapshots

You can do the following VM snapshot actions:

- Create a snapshot
- Revert a snapshot
- Delete a snapshot
- Delete all snapshots
- Mark a snapshot as golden

Note You can manage the snapshot of the VM that is in the power on state.

For a selected VM on the **VMs** tab, choose the following actions from the drop-down icon that appears at the top right corner of the VMs table (or right-click the VM and choose the action from the drop-down menu):

Name	Description
Create Snapshot	Creates a snapshot with a name and description.
Revert Snapshot	Reverts back to the most recent snapshot of a VM, thereby bringing the VM back on line. If the VM crashes or malfunctions, you can revert back to the most recent snapshot. You can also select a specific snapshot to revert back to, if there is more than one snapshot.
Mark Golden	Marks a snapshot as golden. Marking a snapshot as golden prevents it from being accidentally deleted. The only way to delete a golden snapshot is to unmark the golden snapshot (returning it to a standard snapshot).
Delete Snapshot	Deletes a snapshot.
Delete all Snapshots	Deletes all snapshots for this VM. You can delete all of your snapshots unless a golden snapshot is present. You have to unmark the golden snapshot first before being able to delete all of your snapshots.

Creating a VM Snapshot

You can create a snapshot of a VM at any point in time. You can later choose to revert to this snapshot or delete it.

Step 1 On the menu bar, choose **Virtual** > **Compute**.

Step 2 Expand **All Clouds** and choose an SCVMM cloud.

Step 3 Click the **VMs** tab.

Step 4 From the drop-down icon that appears at the top right corner of the VMs table, choose **Create Snapshot**. Alternately, right-click the VM and choose **Create Snapshot** from the drop-down menu.

Step 5 In the **Create Virtual Machine Snapshot** dialog box, complete the following fields:

Name	Description
Snapshot Name field	Name for the VM snapshot.
Snapshot Description field	Description of the VM snapshot.

Step 6 Click **Proceed**.

Marking a Snapshot as Golden

You can mark a snapshot as golden to prevent it from being accidentally deleted. The only way to delete a golden snapshot is to unmark the golden snapshot (returning it to a standard snapshot).

Step 1 On the menu bar, choose **Virtual** > **Compute**.

Step 2 Expand **All Clouds** and choose an SCVMM cloud.

Step 3 Click the **VMs** tab.

Step 4 From the drop-down icon that appears at the top right corner of the VMs table, choose **Mark Golden Snapshot**.

Step 5 In the **Mark Golden Snapshot** dialog box, complete the following fields:

Name	Description
Snapshot table	Choose a snapshot from the list of snapshots created for the VM.
Mark As Golden Snapshot check box	Check this check box to designate the snapshot as a golden snapshot.

Step 6 Click **Proceed**.

Managing Other VM Actions

You can perform the following actions on VMs and VM disks:

- Manage VM disks—Create, resize, delete
- Assign a VM
- Resize a VM
- Access VM credentials
- Manage VM state—Save state, discard a saved state
- Manage vNICs—Add, replace, edit, delete
- Request an inventory collection
- Repair a VM after failure
- View—Details or stack view

For a selected VM on the **VMs** tab, choose an action from the drop-down list at the top right corner of the VMs table, or right-click the VM button):

Name	Description
View Details	Displays the VM details.
Assign VM	Assigns a VM to a group or vDC. You can set the provisioning time, termination time, and label for a VM, and modify the VM category, if needed.
Stack View	Displays a bird's eye view of the VM information categorized by OS, VM, Hypervisor, and Infrastructure.
Access VM Credentials	Accesses the VM web or remote desktop login credentials (Windows VMs only). **Note** This option is only available if the administrator provides the privilege in the catalog for this VM.
Resize VM	Resizes a VM. You can modify the CPU count, memory, and enable dynamic memory.
Inventory Collection Request	Requests an on-demand inventory collection for a selected VM. You can set the maximum time to wait for the inventory collection.
Save State	Saves the state of the VM.

Name	Description
Discard saved state	Discards a saved state of the VM.
Add vNIC	Adds (or replaces) vNICs to the VM.
Delete vNIC	Deletes a vNIC that you have added to the VM.
VM Disk Resize	Resizes a VM disk. You can specify a new size for a VM disk.
Delete VM Disk	Deletes a selected VM disk.
Create VM Disk	Creates a new VM disk.
Repair VM Disk	Repairs a selected VM disk. This button is available for a failed VM.

Assigning a VM

You can assign a VM to a group or vDC, and modify the VM category if needed. The provisioning time, termination time, and VM label can also be assigned.

Step 1 On the menu bar, choose **Virtual** > **Compute**.

Step 2 Expand **All Clouds** and choose an SCVMM cloud.

Step 3 Click the **VMs** tab.

Step 4 Click **Assign VM**.

Step 5 In the **Assign VM** dialog box, complete the following fields:

Name	Description
VM Name field	The name of the VM (non-editable).
User Group field	Choose the user group. **Note** Only the groups with valid vDC can be selected.
Assign to Users check box	Check this check box to assign the VM to a user.
User drop-down list	This field appears when you check the **Assign to Users** check box. Choose a user from the list of users in selected group. **Note** The user list appears only when the group allows resource assignment for users.
vDC drop-down list	Choose a virtual data center (vDC).
Category drop-down list	Choose a category of the VM.

Name	Description
VM User Label field	VM user label, if necessary.
Set Provision Time check box	Check this check box if you want to set the provisioning time. If checked, continue to Step 6.
Provision Date/Time field	Set the date and time to provision the VM.
Comments field	Enter the comments.

Step 6 Click **Assign**.

Creating a VM Disk

You can create a new VM disk for a selected VM. The disk can be either new, or created from an existing hard disk in the library.

Step 1 On the menu bar, choose **Virtual** > **Compute**.

Step 2 Expand **All Clouds** and choose an SCVMM cloud.

Step 3 Click the **VMs** tab.

Step 4 Click the drop-down icon at the top right corner of the VMs table and choose **Create VM Disk**.

Step 5 In the **Create VM Disk** dialog box, complete the following fields:

Name	Description
VM Name field	The name of the VM (non-editable).
Enter Disk Name field	The name of the disk.
Disk drop-down list	Choose to create a new virtual hard disk or create from an existing one.
Select SCSI Controller drop-down list	Choose a channel and logical unit number (LUN) to which you want to add the disk.
Choose Hard Disk field	This field appears when you choose to use an existing virtual hard disk. Choose a hard disk from which you want to create a VM disk.
Select disk typedrop-down list	This field appears when you choose to create a new virtual hard disk. Choose **Dynamic** or **Fixed** as the disk type.
Disk Size (GB) field	The size of disk in gigabytes.

Step 6 Click **Create**.

Cloning a VM

Cloning a VM makes a copy of an existing VM in order to make a new VM with similar qualities. Cloning can save you time by keeping the parameters that you want from the VM you are cloning from while making adjustments needed for the new VM. The new name given to the clone is defined in the system policy.

Step 1 On the menu bar, choose **Virtual** > **Compute**.

Step 2 Expand **All Clouds** and choose an SCVMM cloud.

Step 3 Click the **VMs** tab.

Step 4 Click the drop-down icon at the top right corner of the VMs table and choose **Clone**.

Step 5 In the **Clone VM** dialog box, select the group on which you want the VM deployed from the **Select Groups** field.

Step 6 Click **Next**.

Step 7 In the **Customization Options** pane, complete the following fields:

Name	Description
Category field	Click **Select** to view a list of VDC categories. Select a category and click **Select**.
Post Provisioning Customs Actions check box	Click **Enable** to attach a workflow. The **Workflow** drop-down list appears with a list of work flows to choose from. The chosen workflow initiates when the provisioning starts.
VM App Charge Frequency drop-down list	Choose **Hourly** or **Monthly**.
Active VM Application Cost field	The cost for the application that is included in the template.
Inactive VM Application Cost field	The cost to this catalog of a VM in inactive state per hour or month.

Step 8 Click **Next**.

Step 9 In the **Deployment Configuration** pane, complete the following fields:

Name	Description
Select VDC drop-down list	Choose a VDC containing the policies you want for the VM.
VM Name or VM Prefix field	The VM name or prefix.

Name	Description
Comment field	Optionally, enter a description of the VDC.
Provision drop-down list	Choose **Now** to provision the VDC now or choose **Later** to provision the VDC later. If you choose **Later**, then fields to specify the date and time appear.
Lease Time check box	Check the check box to configure a lease expiration time.

Step 10 Click **Next**.

Step 11 In the **Custom Specification** pane, complete the following fields:

Name	Description
CPU Cores drop-down list	Choose the CPU cores for the VM being provisioned.
Enable Dynamic Memory check box	Check to provision the VM with dynamically allocated memory. You can specify custom memory parameters in the **Startup Memory**, **Maximum Memory**, and **Memory Buffer** drop-down lists.
Memory drop-down list	Choose the amount of memory for the VM being provisioned.

Step 12 Click **Next**.

Step 13 In the **Custom Workflow** pane, if applicable, complete the required fields.

Note Custom workflow inputs apply if the catalog chosen for VM provisioning has Post Provisioning Custom Actions enabled.

Step 14 Click **Next**.

Step 15 In the **Select VM Networks** pane, if applicable, click the **VM Networks** pencil icon to edit a VM network.

Note The **Select VM Networks** pane is empty unless the **Allow end user to select optional NICs** check box is chosen in the network policy.

Step 16 In the **Select** dialog box, choose one or more clouds that you want associated with the VM.

Step 17 Click **Submit**.

Step 18 If you checked the **Perform deployment assessment** check box, then review the report of the assessment displayed in the **Deployment Assessment** pane.

If this assessment report identifies errors, then you must return to the previous panes and rectify the errors before submitting the request. If the assessment report shows no errors, then click **Next**.

Step 19 In the **Select Datastores** pane, if applicable, click **Select** in the **Select Datastore** field to select one or more datastores to associate with the VM.

Note This option is only available if **Allow user to select datastore from scope** is checked in the storage policy. The datastore choices that are available depend upon the storage policy that is associated to the VM's VDC.

Step 20 Click **Next**.

Step 21 Review the cloned VM information in the **Summary** panel.

Step 22 Click **Submit**.

Managing vNICs

You can add a vNIC to a VM, as well as edit, replace, and delete a vNIC. The available options for a vNIC are determined by the network policy mapped to the vDC that is associated with the VM.

Note The VM must be powered off to perform vNIC actions. If the VM is in the on state, turn off the power of the VM using the **Power Off** action.

Before You Begin

Ensure that a network policy is assigned to the VM network. Turn off the power on the VM.

Step 1 On the menu bar, choose **Virtual** > **Compute**.

Step 2 Expand **All Clouds** and choose an SCVMM cloud.

Step 3 Click the **VMs** tab.

Step 4 Choose a VM that need to be configured with vNICs.

Step 5 Click the drop-down icon at the top right corner of the VMs table and choose **Add vNICs** from the drop-down list.

Step 6 In the **Add VM vNICs** dialog box, complete the following fields:

Name	Description
Operation drop-down list	Choose Add or Replace. **Note** You cannot add a vNIC if you exceed the vNIC limit configured in the network policy for VMs in the vDC.
VM Networks table	Click the icon to add, edit, or delete a vNIC. **Note** You can only edit or delete a vNIC in the list. You cannot edit or delete pre-existing vNICs in the VM.

Step 7 In the **Add Entry to VM Networks** dialog box, check or uncheck the **Use DHCP** checkbox.
Note An error message appears if there is no network policy assigned to the VM network.

Step 8 Click **Close**.

Step 9 Click **Submit**.

Adding a VM NIC

Before You Begin

Ensure that the VM is powered off to perform VM NICs actions. If the VM is in the on state, turn off the power of the VM using the **Power Off** action.

Step 1 On the menu bar, choose **Virtual** > **Compute**.

Step 2 Expand **All Clouds** and choose an SCVMM cloud.

Step 3 Click the **VMs** tab.

Step 4 Choose the VM to which you want to add a VM NIC.

Step 5 Click the drop-down icon at the top right corner of the VMs table and choose **Add NIC** from the drop-down list.

Step 6 In the **Add VM NIC** dialog box, complete the following fields:

Name	Description
Adapter Type drop-down list	Choose Synthetic or Emulated. The network adapters are used to connect the virtual machines to internal networks, or to external networks after the virtual machines are deployed on a host. Synthetic network adapters provide better performance than emulated network adapters. Emulated network adapters are available on all virtualization software platforms and allow virtual machines to be connected to virtual networks.
VM Network table	Network to which you are adding the VM NIC.
Subnet field	Subnet to which you are adding the VM NIC.
Use DHCP check box	By default, DHCP is enabled. Uncheck to disable DHCP.
Port Classification field	Provides global names used to identify different types of virtual network adapter port profiles. The port classification settings remain specific to each logical switch, even if they can be used across multiple logical switches.

Step 7 Click **Submit**.

Step 8 Click **OK**.

Editing a VM NIC

Before You Begin

Ensure that the VM is powered off to perform VM NICs actions. If the VM is in the on state, turn off the power of the VM using the **Power Off** action.

Step 1 On the menu bar, choose **Virtual** > **Compute**.

Step 2 Expand **All Clouds** and choose an SCVMM cloud.

Step 3 Click the **VMs** tab.

Step 4 Choose the VM you want to configure.

Step 5 Click the drop-down icon at the top right corner of the VMs table and choose **Edit NIC** from the drop-down list.

Step 6 In the **Edit VM NIC** dialog box, make the necessary changes.

Step 7 Click **Submit**.

Step 8 Click **OK**.

CHAPTER 8

Orchestration Workflow Operations

This chapter contains the following sections:

Hyper-V Orchestration Tasks

Cisco UCS Director includes orchestration features that allow you to automate the configuration and management of tasks performed by SCVMM in one or more workflows. The same workflow can include Hyper-V VM, Hyper-V host, network, and storage tasks.

For more information about orchestration in Cisco UCS Director, see the Cisco UCS Director Orchestration Guide.

Location of Orchestration Tasks

A complete list of the orchestration tasks is available in Workflow Designer, in the Task Library and the **Virtualization** folder. The Task Library, which includes a description of the orchestration tasks, can be accessed from the following locations in Cisco UCS Director:

- **Policies** > **Orchestration** > **Workflows**
- `http://IP_address/app/cloudmgr/onlinedocs/cloupiaTaskLib.html` where *IP_address* is the IP address of Cisco UCS Director.

Types of Orchestration Tasks

The Hyper-V orchestration tasks include tasks to configure and manage the following:

- VM
- Host
- Virtual network
- Logical network

- Logical network definition
- Host network adapter
- Virtual network adapter
- PNIC
- Storage
- Logical unit network (LUN)
- Logical switch
- Standard switch
- Uplink port profile
- Storage classification
- File share
- Storage logical unit
- Storage provider

Accessing Task Documentation

Step 1 On the menu bar, choose **Policies** > **Orchestration**.

Step 2 Click the **Task Library** icon.

Step 3 Check the **Regenerate document** check box to view a list of all new tasks and those by open automation.

Step 4 Click **Submit**.
The orchestration task library appears. Click an entry to see more information about specific inputs and outputs that are available.

Validating and Executing an Orchestration Workflow

After you validate all the tasks in a workflow and bind them to the local environment, the entire workflow must be validated.

Step 1 At the top right corner of Workflow Designer, click the **Validate** button. Workflow Designer confirms if the workflow is valid with a "Completed (Success)" message.

Step 2 Click **Execute Now** to activate the orchestration workflow.

Managing Triggers

Triggers are used to execute workflows based on specified conditions. Once those conditions are met, a workflow is automatically executed.

Step 1 On the menu bar, choose **Policies** > **Orchestration**.

Step 2 Click the **Triggers** tab.
The triggers created in the Cisco UCS Director are displayed. The **Triggers** tab provides the following actions:

Action	Description
Refresh	Refreshes the current page.
Favorite	Adds this page to the **Favorites** tab which displays the page that you go to most often.
Add	Creates a trigger in the Cisco UCS Director.

When you choose a trigger, the following actions appear:

Action	Description
Edit	Edits a trigger.
Delete	Deletes a trigger after confirmation.
Clone	Clones a trigger.
Reset	Resets the selected trigger after confirmation.
View Log	Displays the log information of the triggers.

Adding a Trigger

Step 1 Navigate to the **Triggers** tab.
For more information about how to navigate to the **Triggers** tab, see #unique_64.

Step 2 Click **Add**.

Step 3 In the **Add Trigger** dialog box, complete the following field:

Name	Description
Trigger Name field	The name of the trigger.
Is Enabled check box	Check this check box to enable the trigger.
Description field	The description of trigger.
Frequency drop-down list	Choose the frequency at which the trigger rule is verified.
Trigger Type drop-down list	Choose one of the following as the trigger type: • **Stateful—**Executes the action only when there is a change in the state of the trigger. • **Stateless—**Executes the trigger condition at a frequency provided in the frequency field irrespective of the trigger state.

Step 4 Click **Next**.

Step 5 In the **Specify Conditions** pane, complete the following fields:

Name	Description

Conditions field	Click the + icon to add a condition.
	In the **Add Entry To Conditions** dialog box, complete the following fields:
	• **Types of Objects to Monitor** drop-down list—Choose **Hyper V Host** as the type of object to be monitored.
	• **Object** drop-down list—Choose a Hyper-V host to monitor.
	• **Parameter** drop-down list—Choose one of the following parameters:
	  • CPU Usage % (Last Day Avg)
	  • CPU Usage % (Last Hour Avg)
	  • Memory Usage % (Last Day Avg)
	  • Memory Usage % (Last Hour Avg)
	  • Power Status
	• **Operation** drop-down list—Choose an operator from the list of operators that appear according to the selected parameter.
	• **Value** drop-down list—Choose a value from the list of values that appear according to the selected parameter.

Trigger When drop-down list	Choose one of the following conditions: Any Condition(s) Satisfied or trigger type: • **All Condition(s) Satisfied**—To trigger the workflow only when all set conditions are met. • **Any Condition(s) Satisfied**—To trigger the workflow if any one of the set conditions is met.

Step 6 Click **Next**.

Step 7 In the **Specify Workflow** pane, complete the following fields:

Name	Description
Maximum Invocations field	The number of times that the trigger is invoked.
(When Trigger State Becomes Active) Select Workflow drop-down list	Choose the workflow to be executed when the trigger is activated.

Name	Description
(When Trigger State Become Clear) Select Workflow drop-down list	This field is optional. Choose the workflow to be executed when the trigger is cleared.

Step 8 Click **Next**.

Step 9 In the **Specify Workflow Inputs** pane, provide the input for the selected workflows.

Step 10 Click **Submit**.

CHAPTER 9

Monitoring and Reports

This chapter contains the following sections:

Viewing the Summary Report

The summary page displays a wide array of Tabular, Graphical, and Map reports to help the administrator manage system inventory. These reports are helpful for performing lifecycle actions on the inventory.

The administrator can configure settings to display only the required information for a given item. Each report is displayed as a widget, and can be hidden by customizing.

Step 1 On the menu bar, choose **Virtual** > **Compute**.

Step 2 Expand the Clouds and choose the SCVMM cloud.
You can view tabular and graphical summaries for the following:

Report	Description
Overview	Displays the cloud types, last status message, last polled time, server IP address, product name, product version, total VMs, and active VMs.
New VMs	Displays the new VMs for today, last 24 hours, and last hour.

Report	Description
Deleted VMs	Displays the deleted VMs for today, last 24 hours, and last hour.
VMs Active vs. Inactive	Displays the number of active and inactive VMs in the cloud.
Trend: Snapshot File Size	Displays the snapshot file size in the last 24 hours, week, or month.
Memory	Displays the total memory capacity, provisioned, and reserved.
CPU	Displays the total CPU capacity, provisioned, and reserved.
Disk	Displays the total disk capacity, provisioned, and reserved.
Trend: Number of VMs	Displays the number of total and active VMs in the last 24 hours, week, or month.
Trend: VM Additions & Deletions	Displays the VMs added and deleted in the last 24 hours, week, or month.
Trend: Number of Host Nodes	Displays the total nodes, active nodes, and total CPU sockets.
Number of Events by Severity	Displays the number of minor, major, and critical events in the last 24 hours, week, or month.

Monitoring Inventory

The cloud dashboard displays complete SCVMM cloud-level infrastructure information. You can monitor inventory using this dashboard. There are various tabs you can view for a selected cloud.

Note Remember to always click **Refresh** to see all updates to the physical infrastructure.

Step 1 On the menu bar, choose **Virtual** > **Compute**.

Step 2 Expand the clouds and choose the SCVMM cloud.
You can view the following inventory information:

Tab	Description
Polling	Displays the start time, collection type, status, message, and end time. The polling interval depends upon the cloud polling interval set in administration system parameters. You can also click **Request Inventory Collection** to view an on-demand inventory.
vDCs	Displays information about the vDCs associated with the account, including the group, type, lock state, total VMs, active VMs, number of custom categories, status, and tag. The catalog item can become invalid when image, template, approver, or policies used in the catalog no longer exist. Clicking **View Details** that appears when you choose a vDC provides additional information of vDC. The additional information includes summary, VMs, events, static IP assignment (Static IP assignment is not applicable for Hyper-V), deleted VMs, VM action requests, vDC compliance on VMs, and more reports.
VM Action Requests	Displays the VM ID, action ID, user name, comments, and scheduled time of the action requests.
Events	Displays information about all events related to the account, including severity, event time, user, event ID, event type, event code, description, instance name, host name, VM type, and parent node.
VMs	Displays the list of VMs in the account. Provides actions to assign VM to users and user group, configure lease time, stack view, access VM credentials, and launch VM client. Clicking **View Details** that appears when you choose a VM provides additional information of VM. The additional information includes details, service request details, snapshots, VM action requests, events, disks, vNICs, VM network connectivity, and more reports.
Clusters	Displays the information of clusters that include the cluster name, total memory (GB), effective memory (GB), total CPU (GHz), effective CPU (GHz), CPU cores, effective hosts, hosts, validation status, and host group. Clicking **View Details** that appears when you choose a cluster provides additional information of cluster. The additional information includes summary, host node, cluster shared volumes, file shares, available storage, virtual switches, VMs, events, cluster network connectivity, and service request details.

Tab	Description
Host Nodes	Displays the host node, cluster name, product name, product version, host OS, host OS version, active VMs, total VMs, power status, VMRC state, PRO state, and host group of the cloud, and the SCVMM cloud to which it is assigned. Clicking **View Details** that appears when you choose a host node provides additional information of host node. The additional information includes summary, service requests, VMs, events, deleted VMs, host volumes, file shares, physical disks report, host network topology, and more reports.
Deleted VMs	Displays the details of the deleted VMs. When you choose a VM and click **View Details**, you get deleted VM details, service request details, snapshots, VM action requests, events, disks, vNICs, VM network connectivity, and more reports.
Images	Displays the image name, parent node, guest OS, integration services, memory (MB), number of CPUs, and last updated time. **Note** Administrators can provision new VMs from these images. Choose an image and click **View Details** to view the disk and vNICs details of the image.
Library Servers	Displays a list of library servers in the cloud. Choose a library server and click **View Details** to view the information about stored VMs, stored disks, ISOs, and library shares of the library server.
Host Groups	Displays the host group, account, parent host group, root status, inherit network settings, and the SCVMM cloud to which it is assigned, Choose a host group and click **View Details** to view the summary, logical units, storage pools, MAC address pools, logical network definitions, and service request details of the host group.
Jobs	Displays the history for the SCVMM jobs queue in the last 2 hours.
Run As Accounts	Displays the credentials that a user enters for any process as a Run As account. A Run As account is a container for a set of stored credentials.

Tab	Description
Custom Resources	Displays a list of custom resource package which is simply a folder in the SCVMM library with a .cr extension. This folder contains all the files required by your script, and the script itself. The script is executed in this folder as its working directory once it is all copied over to the machine.
Topology	Choose a topology type and click **View Connectivity** to view topology in the hierarchical, concentric, circular, or force directed view mode and adjust factors such as item spacing, distance, radius, rigidity, and force distance.
Top 5 Reports	Displays reports on the top five VMs, hosts, and vDCs in several categories, including memory usage, CPU usage, and disk usage.
Map Reports	Displays reports as maps, including a CPU utilization map, VM density, inactive VMs, and storage usage.
More Reports	Provides tabular, trending, and instant reports on VMs, CPUs, events, snapshot file size, CPU usage, and disk.

Viewing the Storage Report

Step 1 On the menu bar, choose **Virtual** > **Storage**.

Step 2 Expand the Clouds and choose the SCVMM cloud.
You can view the storage details in the following tabs:

Tab	Description
Summary	Displays the overview of datastore, local storage information, NTFS (SAN), and Server Message Block (SMB) in the tabular format. Displays the following graphs: • Used storage per storage type • Total capacity per storage type • Trend: Storage capacity, used, and free (last week) • Trend: Storage free by storage type (last week) • Trend: Storage used by storage type (last week) • Total capacity used by storage type (last week) • Free storage per storage type
DataStore Capacity Report	Displays the datastore capacity report. Choose a report and click **View Details** to view more details about the report. The report includes summary, VM Disks, hosts, top five reports, service request details, and more.
File Server Report	Displays the file server report. Choose a report and click **View Details** to view the file shares report and service request details.
Storage Array Report	Displays the storage array report. Choose a report and click **View Details** to view the storage pools report and service request details.
Storage Provider Report	Displays the storage provider report with the status. Choose a report and click **View Details** to view the service request details.
Storage Classifications Report	Displays the storage classification name, account name, description, accessibility, if enabled, and the SCVMM cloud to which it is assigned. Choose a report and click **View Details** to view the storage pools report and service request details.
Map Reports	Displays storage usage reports as maps. Click the **Show Labels** check box to view the report label.
More Reports	Provides tabular, trending, and instant reports on storage provider, storage capacity, and storage usage reports.

Performance Reports

Cisco UCS Director monitors the virtual infrastructure and system resources by displaying a wise array of tabular, graphical, and map reports.

These reports help you understanding system details and provide insight into how the system is performing.

Reports provide the following types of information:

- **Tabular Reports—**System information, such as overview, host nodes, new VMs, and deleted VMs.
- **Bar and Pie Graphs—**Comparisons, such as active vs. inactive VMs, provisioned vs. capacity CPU, and so on.
- **Trend Graphs—**System resources, such as CPU trend, memory trend, and VM additions and deletions.
- **Top five Reports—**Groups with the most VMs, vDCs with the most VMs, vDCs with the most CPU usage, vDCs with the most memory usage, and vDCs with the most disk usage.
- **Map Reports—**Heat maps and color-coded maps, such as CPU utilization map, VM density, inactive VMs, and storage usage.

Viewing Performance Reports

Step 1 On the menu bar, choose **Virtual** > **Compute**.

Step 2 Expand the clouds and choose the SCVMM cloud.

Step 3 In the **Summary** tab, view the various types of reports.

Viewing Network Reports

Step 1 On the menu bar, choose **Virtual** > **Network**.

Step 2 Expand the Clouds and choose the SCVMM cloud.
You can view the storage details in the following tabs:

Tab	Description
Summary	Displays an overview of virtual networks information.
Network Inventory Report	Displays the host node, VLAN supported, virtual networks, physical network adapters, and host power state information.

Tab	Description
Host Network Adapters Report	Displays the host node, name, connection name, network location, logical networks, physical address, IP address, status, VLAN mode, VLAN IDs, virtual network, and description information.
VM Network Adapters Report	Displays the ID, VM name, host name, name, adapter type, access, physical address, enable state, VLAN ID, MAC address, logical network, VM network, VM subnet, and virtual network information.
Logical Networks Report	Displays the name, description, network virtualization enabled, private LAN enabled, use GRE, isolated sites, network entity access, virtual switch extension manager, and the SCVMM cloud to which it is assigned.
Logical Switches Report	Displays the account name, name, description, uplink mode, minimum bandwidth mode, SRIOV enabled, and virtual switch extensions information.
MAC Address Pools Report	Displays the name, description, starting MAC address, ending MAC address, available addresses, unassigned addresses, total addresses, host groups, and supported virtualization platforms information.
Static IP Address Pools Report	Displays the account name, name, description, subnet, VLAN ID, starting IP address, ending IP address, if it is a multicast pool, DNS servers, default gateway, WINS servers, logical network definition, and VM subnet information
Port Classifications Report	Displays the name, description, logical switch, SCVMM cloud, and tag information.
Virtual Network Adapter Port Profiles Report	Displays the name, description, minimum bandwidth weight, absolute minimum bandwidth (Mbps), absolute maximum bandwidth, allow teaming, allow MAC address spoofing, allow IEEE priority tagging, enable DHCP guard, enable VMQ, enable IPsec offload, enable SR-IOV, network entity access type, and virtual switch extensions information.
Uplink Port Profiles Report	Displays the name, description, load balancing algorithm, teaming mode, network virtualization enabled, logical network definitions, network entity access type, and virtual switch extensions information.

Tab	Description
Network Services Report	Displays the account, name, connection string, manufacturer, model, run as account, and provider information.
Virtual Switches Report	Displays the host node, name, network type, highly available, network optimization available, virtual DHCP enabled, description, and tag information.
VM Networks Report	Displays the name, description, logical network, isolation type, GRE enabled, PVLAN enabled, network entity access type, and tag information.

Cloudsense Reports

CloudSense Analytics in Cisco UCS Director provide visibility into the infrastructure resources utilization, critical performance metrics across the IT infrastructure stack, and capacity in real time. CloudSense significantly improves capacity trending, forecasting, reporting, and planning of virtual and cloud infrastructures.

You can generate the following reports for Hyper-V accounts with CloudSense:

- Hyper-V cloud utilization summary report
- VM activity report by group
- VM performance summary
- Virtual infrastructure and assets report

Generating a Report

Before You Begin

You must be signed into the appliance before completing this task.

Step 1 On the menu bar, choose **CloudSense** > **Reports**.

Step 2 From the left panel, choose the report.

Step 3 Click **Generate Report**.

Step 4 In the **Generate Report** dialog box, complete the following fields:

Name	Description
Context drop-down list	Select the group that you want to generate the report for. **Note** If you are an administrator, then this drop-down list displays all the groups for which you have administrative privileges. For example, if you are an MSP administrator, then this drop-down list displays all the customer groups that you manage. This list does not display any other groups.
Report Label field	You can provide a label for the report to distinguish it from the other reports that you generate.

Step 5 Click **Submit**.
The report is generated in the system. This generated report is accessible only to you and to users in the groups that you manage. For example, if you are an MSP administrator, then this generated report is not visible to other MSP administrators or groups.

Generating an Assessment

Before You Begin

You must be signed into the appliance before completing this task.

Step 1 On the menu bar, choose **CloudSense** > **Assessments**.

Step 2 Click **Virtual Infrastructure Assessment Report**.

Step 3 Click **Generate Report**.
This step generates a new instant report in either HTML or PDF format.