Managing Policies

This chapter contains the following sections:

About Policies

Cisco UCS Director provides an End User Portal using which resources such as virtual machines (VMs) or bare metal servers, are provisioned from a pool of assigned resources using predefined policies set by administrators.

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 that you set up the following policies to provision resources:

- Adding a Hyper-V Computing Policy
- Adding a Hyper-V Storage Policy
- Adding a Hyper-V Network Policy

In addition, there are service delivery policies for cost models, OS licenses, and Hyper-V system.

Important Create a cloud account prior to setting up policies to provision VMs.

About Service Delivery

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

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

Choose **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, storage, and network) with VM costs to determine the total cost of a VM lifecycle.

For a cost model, you can define the following costs:

- One-time provisioning cost
- Active and inactive VM costs
- Provisioned, reserved, and used CPU costs
- Provisioned, reserved, and used Memory costs
- Committed and uncommitted Storage costs
- Received,and transmitted Network Data costs

Adding a Cost Model

Step 1 Choose **Policies** > **Virtual/Hypervisor Policies** > **Service Delivery**.

Step 2 On the **Service Delivery** page, click **Cost Model**.

Step 3 Click **Add**.

Step 4 On the **Add Cost Model** screen, 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.
Virtual Machine Cost Parameters	

Name	Description
One Time Cost field	The fixed one-time cost for provisioning the VM.
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 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.
Reserved CPU Cost field	The reserved CPU cost per CPU charge unit (GHz) per hour. The cost is applicable for active VMs only.
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.
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.
Reserved Memory Cost field	The reserved memory cost per GB. The cost is applicable for active VMs only.
Used Memory Cost field	The hourly reserved memory cost per GB. The cost is applicable for active VMs.
Received Network Data Cost field	The received network data cost per GB. The cost is applicable for active VMs only.
Transmitted Network Data Cost field	The transmitted network data cost per GB. The cost is applicable for active VMs only.
Committed Storage Cost field	The hourly committed storage cost per GB for both the active and inactive VMs.
Uncommitted Storage Cost field	The hourly uncommitted (un-used but provisioned) storage cost per GB for both the active and inactive VMs.
Tag Based Cost Model drop-down list	Select a tag-based cost model. This list displays all the tag-based cost models that you have created.
Physical Server Cost Parameters	
One Time Cost field	The fixed one-time cost for provisioning the VM.

Name	Description
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 Memory Cost field	The hourly reserved memory cost per GB. The cost is applicable for active VMs.
Committed Storage Cost field	The hourly committed storage cost per GB for both the active and inactive VMs.
Full Length Blade Cost field	Cost of full length blade servers per hour. This cost is applicable for physical servers only.
Half Length Blade Cost field	Cost of half length blade servers per hour. This cost is applicable for physical servers only.

Step 5 Click **Add**.

OS Licenses

Cisco UCS Director provides an option for users to add Windows OS licenses. These licenses are mapped to Windows images during the creation of a catalog. You have an option to provide the Windows OS license for a Windows image in Hyper-V System Policy or choose the key from the OS version field during catalog creation.

Adding OS License Details

Step 1 Choose **Policies** > **Virtual/Hypervisor Policies** > **Service Delivery**.

Step 2 On the **Service Delivery** page, click **OS License**.

Step 3 Click **Add**.

Step 4 On the **Add License Details** screen, 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.

Name	Description
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 5 Click **Submit**.

Hyper-V System Policy

The Hyper-V system 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

Adding a Hyper-V System Policy

Step 1 Choose **Policies** > **Virtual/Hypervisor Policies** > **Service Delivery**.

Step 2 On the **Service Delivery** page, click **HyperV System Policy**.

Step 3 Click **Add**.

Step 4 On the **Add Policy** screen, 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 if you want all VMs deployed using this policy to be automatically powered on.

Name	Description
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 ##).
Disable VM Name Uniqueness Check check box	Check to disable the VM name uniqueness check when the VM is provisioned. Disabling the VM name uniqueness check allows you to disable the VM name validation across Cisco UCS Director and use the same VM name in a multi-tenant, multi-domain, and multi-workgroup environment. If this field is unchecked, the VM name uniqueness check runs and only allows the same VM name if it is provisioned in a different tenant, domain, or workgroup.
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.
Disable Host Name Uniqueness Check check box	Check to disable the host name uniqueness check when the VM is provisioned with guest OS customizations. Disabling the host name uniqueness check allows you to disable the host name validation across Cisco UCS Director and use the same host name in a multi-tenant, multi-domain, and multi-workgroup environment. If this field is unchecked, the host name uniqueness check runs and only allows the same host name if the VM is going to be provisioned in a different tenant, domain, or workgroup.
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.

Name	Description
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.
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.
Username	The non-default local username for Windows 7,8,10 Operating Systems
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.

Name	Description
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**.
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 Choose **Policies** > **Virtual/Hypervisor Policies** > **Computing**.

Step 2 On the **Computing** page, click **HyperV Computing Policy**.

Step 3 Choose a VM.

Step 4 Click **Add**.

Step 5 On the **Add Policy** screen, complete the following fields.

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

Name	Description
Policy Name field	The policy name.

Name	Description
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.
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 (cluster shared volume) in the storage policy and the common virtual switch available to the 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. See the next step for more information about the specific 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 6 To override the template, complete the following fields:

Name	Description
Number of vCPUs	Enter the number of vCPUs.

Name	Description
Enable Dynamic Memory check box	Check this check box to enable dynamic memory.
Memory (MB) field	The memory to be allocated.
Memory Weight field	Specify how to prioritize the availability of memory for this VM compared to other virtual machines. The memory values can range from 0 to 10000, with 10000 being the higher precedence. **Note** Specifying a lower setting for this VM may prevent it from starting when other VMs are running and available memory is low.

Step 7 To allow VM resizing, complete the following fields:

Name	Description
Permitted values for vCPUs field	The permitted individual values for vCPUs. Maximum allowed vCPU count is 64
Permitted values for Memory in MB field	The permitted individual values for memory (MB) Specify the available memory values as a comma-separated list. For example: 512,768,1024
Permitted values for Startup Memory field	The permitted individual values for startup memory (MB) Specify the available memory values as a comma-separated list. For example: 512,768,1024
Permitted values for Maximum Memory in MB field	The permitted individual values for maximum memory (MB) Specify the available memory values as a comma-separated list. For example: 512,768,1024
Permitted values for Memory Buffer (%) field	The permitted individual values for the memory buffer (percentages) Specify the available memory values as a comma-separated list. For example: 10,25,50
Permitted values for Memory Weight field	Specify the memory weight values as a comma-separated list (range between 0 and 10000). For example: 500,1000,8000

Step 8 Click **Submit**.

Adding a Hyper-V Storage Policy

Step 1 Choose **Policies** > **Virtual/Hypervisor Policies** > **Storage**.

Step 2 On the **Storage** page, click **HyperV Storage Policy**.

Step 3 Choose a VM.

Step 4 Click **Add**.

Step 5 On the **Add Policy** screen, 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).
Filter Conditions check boxes	Check the conditions that apply. Any data stores that do not meet these criteria are excluded. For each selected **Filter 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.
Use Dynamic Provisioning check box	Check this check box to enable dynamic memory. This field appears when you check the **Override Template** check box.
Custom Disk Size (GB) field	The custom disk size to be allocated. This field appears when you check the **Override Template** check box.
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	The permitted values for disk in GB. This field appears when you check the **Allow Resizing of Disk** check box.
Allow user to select datastores from scope check box	Check this check box to allow users to select datastores from scope.

Step 6 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 Choose **Policies** > **Virtual/Hypervisor Policies** > **Network**.

Step 2 On the **Network** page, click **HyperV Networking Policy**.

Step 3 Choose a VM.

Step 4 Click **Add**.

Step 5 On the **Network Policy Information** screen, 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 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 6 To add a VM NIC to the network policy, on the **Add Entry to VM NICs** screen, 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 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 7 To add a VM network to the network policy, on the **Add Entry to VM Networks** screen, complete the following fields:

Name	Description
Network Name field	Click check box and choose a network.

Name	Description
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	Choose a subnet from the drop-down list. This field appears when you choose an external network or a virtualization-based VM network.
VLAN ID drop-down list	Choose a VLAN ID from the drop-down list. This field appears when you choose virtualization-based network without isolation.
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	Choose the static IP pool from a list of IP pools in SCVMM. This field appears when the **Use DHCP** check box is unchecked.
Port Classification drop-down list	(Optional) Choose a port classification from the list of port classifications displayed based on the selected network.

Step 8 Click **Submit**.