



# Multiple Disk VM Provisioning

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## About Multiple Disk VM Provisioning

Cisco UCS Director supports virtual machine (VM) provisioning of multiple disks from a template. You can configure VM disk provisioning on a preferred single datastore or on multiple datastores. You can also configure individual disk policies for each additional disk in a template.

Cisco UCS Director classifies the disks into the following categories:

- System
- Data
- Database
- Swap
- Log



**Note**

The disk categories that are defined by Cisco UCS Director are for disk labeling only.

# Overview of the Procedure for Multiple Disk VM Provisioning

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- Step 1** Check for the availability of a template with multiple disks.
- Step 2** Assign disk categories.
- Step 3** Define the storage policy.
- Step 4** Create the template catalog.
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## About Templates with Multiple Disks

To provision a multiple disk virtual machine (VM), a template (image) with multiple disks, must be available. Before using a template with multiple disks for VM provisioning, you must assign the disk categories for individual disks.

## Assigning Disk Categories

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- Step 1** On the menu bar, choose **Virtual > Compute**.
- Step 2** Choose a VMware cloud and choose the **Images** tab.
- Step 3** Choose a template with multiple disks.
- Step 4** On the toolbar, click the **View Details** button.
- Step 5** Click the **Disk** tab.
- Step 6** Choose a disk.
- Step 7** Click **Assign Disk Type**.
- Step 8** Choose the disk type.  
It can be one of the following:
- System
  - Data
  - Database
  - Swap
  - Log
- Step 9** Click **Submit**.
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# Defining Storage Policies

A storage policy defines resources such as datastore scope, type of storage to use, minimum conditions for capacity, and latency. This policy also provides an option to configure additional disk policies for multiple disks, and an option to provide datastore choices for end users during a service request creation.

Cisco UCS Director supports VM provisioning with multiple disks on multiple datastores. There are five types of disks: System, Data, Database, Swap, and Log. The System disk policy is configured first, and the other disks are configured later depending on the requirements. You can configure the disk policy individually for each disk type, or choose the default system disk policy.

When using additional disk policies, be sure to uncheck the **Provision all disks in a single datastore** option during catalog creation for the multiple disk template. For more information about catalog creation, see [Adding a Catalog, on page 8](#).

In addition, Cisco UCS Director supports datastore selection during the creation of a service request for VM provisioning. It gives you an option to enable or disable datastore selection for the end user. When a VDC is specified at creation of a service request, the scope conditions defined in its storage policy determine which datastores appear for selection here.

## Creating a Storage Policy

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

**Step 2** Choose the **VMware Storage Policy** tab.

**Step 3** Click **Add (+)**.

**Step 4** In the **Add Storage Resource Allocation Policy- System Disk Policy** pane, complete the following fields

| Name                             | Description   |
|----------------------------------|---|
| <b>Policy Name</b> field         | Choose the cloud in which resource allocation occurs.   |
| <b>Policy Description</b> field  | The description of the policy.<br>If you want to narrow the scope of deployment, choose whether to use all, include selected data stores, or exclude selected data stores.  |
| <b>Cloud Name</b> drop-down list | Choose the cloud account for this resource allocation.<br>If you choose an SRM account, the <b>Enable Protection</b> check box is displayed. For more information about how to enable protection groups for Site Recovery Manager, see the <a href="#">Cisco UCS Director VMware Management Guide</a> . |
| <b>System Disk Scope</b>         |   |

| Name  | Description  |
|---|--|
| <b>Use Linked Clone</b> check box                           | If you want to use a linked clone, click the check box.<br>If you do not click this check box, the configuration uses a full clone.  |
| <b>Storage Profile</b> drop-down list                       | Choose a storage profile if you want to provision one or more VMs with the associated storage profile.   |
| <b>Data Stores/Data Store Clusters Scope</b> drop-down list | To define the scope of deployment, choose one of the following options: <ul style="list-style-type: none"> <li>• <b>All</b></li> <li>• <b>Include Selected Datastores</b></li> <li>• <b>Exclude Selected Datastores</b></li> <li>• <b>Include Selected Datastore Clusters</b></li> <li>• <b>Exclude Selected Datastore Clusters</b></li> </ul> Depending upon which option you choose, additional fields may display. <p><b>Note</b> The option that you choose determines which datastores or datastore clusters are available when you create a VM disk.</p> |
| <b>Selected Data Stores</b> field                           | If you chose <b>Include Selected Datastores</b> or <b>Exclude Selected Datastores</b> , click <b>Select</b> to choose the appropriate datastores.  |
| <b>Use Shared Data Store Only</b> check box                 | Click the check box to use shared datastores only.<br>This option is only available if you chose to include or exclude selected datastores.  |
| <b>Selected Datastore Clusters</b> field                    | If you chose <b>Include Selected Datastore Clusters</b> or <b>Exclude Selected Datastore Clusters</b> , click <b>Select</b> to choose the appropriate datastore clusters.  |
| <b>Select SDRS Rule Type</b> drop-down list                 | If you chose to include or exclude selected datastore clusters, choose one of the following SDRS rule types: <ul style="list-style-type: none"> <li>• <b>Keep VMDKs Together</b>—You need to select an existing rule on the filtered clusters. The newly provisioned VM is added to the VM anti-affinity rule.</li> <li>• <b>Separate VMDKs</b>—If the newly provisioned VM contains more than one disk, a new VM affinity rule is created on the datastore cluster.</li> </ul>  |

| Name                            | Description   |
|---------------------------------|---|
| Select SDRS Rule field          | If you chose <b>Keep VMDKs Together</b> , you must choose the VMs that you want to apply the rule to.   |
| <b>Storage Options</b>          |   |
| Use Local Storage check box     | By default, the field is checked. Uncheck the check box if you do not want to use local storage.  |
| Use NFS check box               | By default, the field is checked. Uncheck the check box if you do not want to use NFS storage.  |
| Use VMFS check box              | By default, the field is checked. Uncheck the check box if you do not want to use VMFS storage.   |
| Use SAN check box               | By default, the field is checked. Uncheck the check box if you do not want to use SAN storage.  |
| Filter Conditions check boxes   | <p>To add one more conditions to filter the datastores, do the following for each desired condition:</p> <ul style="list-style-type: none"> <li>• Click the appropriate check box.</li> <li>• Choose the desired option from the drop-down list.</li> <li>• Enter the criteria by which you want to filter the datastores.</li> </ul> <p>Any datastores that do not meet these criteria are excluded from consideration. If more than one condition is chosen, all conditions must match.</p> |
| Override Template check box     | <p>Check the check box to override the template properties. You are provided with options to enter custom settings, such as using thin provisioning or setting a custom disk size.</p>  |
| Use Thin Provisioning check box | <p>Check the check box to use thin provisioning during VM storage provisioning.</p> <p>Thin provisioning enables dynamic allocation of physical storage capacity to increase VM storage utilization.</p> <p>This option is only available if you choose <b>Override Template</b>.</p>   |
| Manual Disk Size                | <p>A custom disk size that overrides the disk size of the template used for VM provisioning.</p> <p>This option is only available if you choose <b>Override Template</b>.</p>   |

| Name  | Description   |
|---|---|
| <b>Resizing Options for VM Lifecycle</b>                    |   |
| <b>Allow Resizing of Disk</b> check box                     | Check the check box to provide the end user with an option to choose the VM disk size before provisioning.  |
| <b>Permitted Values for Disk in GB</b> field                | Specify the custom range of disk size values that are chosen while provisioning a VM. For example: 1, 5, 10, 50, 100, 500, 1024, 5120, 10240, and so on.<br>This option is only available if you choose <b>Allow Resizing of Disk</b> . |
| <b>Allow user to select datastores from scope</b> check box | Check the check box to provide the end user with an option to choose the datastore during the service request creation.   |

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

**Step 6** In the **Additional Disk Policies** pane, do one of the following:

- Choose a disk type to configure if you do not want to use the same disk policy for that disk type as you configured in the System Disk Policy.
- Click **Next** if you want to use the System Disk Policy options for all disk types.

**Note** By default, the disk policy for the disk is the same as in the System Disk Policy that you configured on the **Add Storage Resource Allocation Policy** pane.

**Step 7** If you chose to configure a custom system disk policy for a specific disk type, do the following:

- Click **Edit** (pencil) to edit the disk type.
- In the **Edit Policies Entry** dialog box, uncheck the **Same as System Disk Policy** check box.
- In the **Edit Entry** dialog box, complete the fields.

All the fields displayed here are the same as the fields displayed in the **Add Storage Resource Allocation Policy** pane.

**Note** This configuration determines which datastores are available for the disk type when you create a VM disk.

- Click **Submit**.
- Repeat these steps to configure the other disk types, if desired.

**Note** To use the storage policy created with additional disk policies, you must associate the policy with the VDC that is used for the VM provisioning

**Step 8** Click **Next**.

**Step 9** In the **Hard Disk Policy** pane, you can specify the number of physical disks that you want to create during VM provisioning.

- Click **+** to add a disk and complete the following fields:

| Field                   | Description                                      |
|-------------------------|--|
| <b>Disk Label</b> field | A descriptive label for the disk you are adding. |

| Field   | Description  |
|---|--|
| Disk Size (GB) field                                | The size of the disk.  |
| Disk Type drop-down list                            | Choose the disk type.<br>The options that you see in this drop-down list depends on whether you selected the <b>Same as System Policy</b> check box earlier in this procedure.   |
| <b>Controller Options</b>                           |  |
| Controller Type drop-down list                      | Choose a controller type from the drop-down list.<br>Based on the availability of ports, a controller is mapped to the VM disks.   |
| Create Disk on new Controller check box             | Check this check box to create a new controller.<br>The type of controller that is created is based on the selection you made in the <b>Controller Type</b> drop-down list.  |
| <b>Disk Provisioning Options</b>                    |  |
| Disk Provisioning Options radio buttons             | Check the radio button of the type of provisioning you want to specify. You can specify one of the following: <ul style="list-style-type: none"> <li>• <b>Thin Provision</b></li> <li>• <b>Thick Provision lazy zeroed</b></li> <li>• <b>Thick Provision eager zeroed</b></li> </ul> |
| <b>Resizing Options for VM Life cycle</b>           |  |
| Allow Resizing of Disk check box                    | Check the check box to enable editing of the VM disk size before provisioning.   |
| Permitted Values for Disk in GB field               | This option appears if <b>Allow Resizing of Disk</b> is checked.<br>Specify the custom range of disk size values that are chosen while provisioning a VM. For example: 1, 5, 10, 50, 100, 500, 1024, 5120, 10240, and so on.   |
| Allow user to select datastore from scope check box | Check the check box to provide the user with an option to choose the datastore during the service request creation.  |

**Step 10** Click Submit.

**Note** To use the storage policy created with additional disk policies, you need to associate the policy with the VDC that is used for the VM provisioning.

When using the Additional disks policies configured in a policy, make sure to uncheck the **Provision all disks in a single database** check box during catalog creation for the multiple disk template. For more information about catalog creation, see [Managing Catalogs](#).

# Creating a Catalog

## Adding a Catalog

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

**Step 2** Choose the **Catalog** tab.

**Step 3** Click **Add (+)**.

**Step 4** In the **Catalog Add** dialog box, select the type of catalog that you want to add.

It can be one of the following:

- **Standard**—Used to create catalogs for VM provisioning, using images from a list of clouds.
- **Advanced**—Used for publishing orchestration workflows, such as catalog items.
- **Service Container**—Used for publishing application containers as catalog items.
- **Bare Metal Catalog**—Used to create catalogs for bare metal server provisioning.

ucsadmin-only For information on how to create a bare metal catalog, see [Creating a Bare Metal Server Catalog](#).

**Step 5** Click **Submit**.

**Step 6** In the **Create Catalog** dialog box, complete the following fields:

| Name                             | Description  |
|----------------------------------|--|
| <b>Basic Information</b> pane    |  |
| <b>Catalog Name</b> field        | Enter a name of the catalog.<br><b>Note</b> Once created, a catalog name cannot be modified. |
| <b>Catalog Description</b> field | Enter a description of the catalog.  |

| Name  | Description   |
|---|---|
| Catalog Type drop-down list                 | The type of catalog. It can be one of the following: <ul style="list-style-type: none"> <li><b>Standard</b>—Used to create catalogs for VM provisioning, using images from a list of clouds.</li> <li><b>Advanced</b>—Used for publishing orchestration workflows, such as catalog items.</li> <li><b>Service Container</b>—Used for publishing application containers as catalog items.</li> <li><b>Bare Metal Catalog</b>—Used to create catalogs for bare metal server provisioning.</li> </ul>  |
| Catalog Icon drop-down list                 | Choose from a list of icons to associate this catalog with an image. This icon is seen when you are creating a service request using this catalog.  |
| Applied to all groups check box             | Check the check box to enable all groups to use this catalog. Leave it unchecked to deny its use to other groups.   |
| Support Contact Email Addresses field       | Specify the email address of the support contacts.  |
| Selected Groups check box list              | Check the check boxes for included groups that are from the <b>Select Items</b> dialog box. The checked groups use this catalog to provision new VMs.   |
| Publish to end users check box              | By default, this check box is checked. Uncheck this check box if you do not want this catalog to be visible to end users. If you do not uncheck this check box, then this catalog is visible to the end users of the system.  |
| Cloud Name drop-down list                   | Choose the cloud with the image for VM provisioning.  |
| Provision new VM for ISO mounting check box | Check this check box to clone a new VM from a selected image. If you do not check this check box, a blank VM is created.  |
| Image field                                 | Choose the type of image, (any existing templates such as Windows, Linux, and other files that make up the image) that you use when VMs are provisioned using this catalog.<br><br>If you are a group administrator, or an end user in a group with permissions to create catalogs, this field displays images that have been assigned to the group you belong to.<br><br>If you are an MSP administrator, then this field displays images that have been assigned to your MSP organization, and to the groups within the MSP organization. |

| Name   | Description   |
|--|---|
| <b>Windows License Pool</b> field                        | Choose the Windows License.<br><br><b>Note</b> This option appears only when a Windows image is chosen. This option is not supported in the RHEV KVM Connector.   |
| <b>Provision all disks in single datastore</b> check box | Check the check box to provision all disks in a single datastore. You can also choose to use the datastores configured for each disk in the storage policy.<br>For more information on multiple disk storage policy creation, see <a href="#">Managing Policies</a> .<br><br><b>Note</b> This option appears if the chosen template has multiple disks. This option is not supported in the RHEV KVM Connector. |
| <b>Service Container Template Name</b> drop-down list    | Choose the template from the list.<br><br><b>Note</b> This option appears when the chosen Catalog Type is Service Container.  |
| <b>Select Folder</b> drop-down list                      | Choose the folder within which this catalog must be created.<br><br><b>Note</b> The drop-down list includes names of folders that are available by default. You can either select a folder that is available, or click the + icon to create a new folder.<br><br>To create a new folder in the <b>Add New Folder</b> dialog box, specify a folder name, and select an icon for the folder.                      |

**Step 7** Click **Next**.

**Step 8** In the **Applications Details** pane, complete the following fields:

| Name                                       | Description  |
|--|--|
| <b>Category</b> drop-down list             | Choose a VDC category.   |
| <b>Override</b> check box                  | Check the check box to enable the end user to override the selected category while provisioning a VM using a service request.                |
| <b>Support Contact Email Address</b> field | The email address of the contact who is notified when a service request is created using this catalog item.                                  |
| <b>Specify OS</b> drop-down list           | Choose the type of OS installed on the VM when it is provisioned.<br><br><b>Note</b> This option is not supported in the RHEV KVM Connector. |

| Name                                       | Description   |
|--|---|
| <b>Specify Other OS</b> field              | Specify an OS that is not available in the <b>Specify OS</b> list.<br><b>Note</b> This option is not supported in the RHEV KVM Connector.   |
| <b>Specify Applications</b> check box list | Check the appropriate check boxes to specify applications from the <b>Select Items</b> dialog box. These applications are installed on the VM during provisioning.<br><b>Note</b> This option is not supported in the RHEV KVM Connector.   |
| <b>Specify Other Applications</b> field    | Specify other applications that are not available in the <b>Select Items</b> dialog box.<br><b>Note</b> This option is not supported in the RHEV KVM Connector.   |
| <b>Application Code</b> field              | Specify an application code that is used in the VM name. The application code can be between 1 to 4 characters (for example: W2K3, DB, WS). The application code can be used in a system policy for the VM name by using the variable \${APPCODE}.<br>For example, if the VM Name Template is vm-\${GROUP_NAME}-\${APPCODE}, the VM provisioned with the system policy has the name vm-groupname-W2K3.<br><b>Note</b> This option is not supported in the RHEV KVM Connector. |

**Step 9** Click Next.

**Step 10** In the **User Credentials** pane, complete the following fields:

**Note** These options are not supported in the RHEV KVM Connector.

| Name                                     | Description  |
|--|--|
| <b>Credential Options</b> drop-down list | Choose to allow or disallow users to retrieve VM access credentials (shared).  |
| <b>User ID</b> field                     | The user ID.<br><b>Note</b> This field is available only if a choice is made under <b>Credential Options</b> .       |
| <b>Password</b> field                    | The user password.<br><b>Note</b> This field is available only if a choice is made under <b>Credential Options</b> . |

**Step 11** Click Next.

**Step 12** In the **Customization** pane, complete the following fields:

| Name  | Description   |
|---|---|
| <b>Automatic Guest Customization Enable</b> check box | Check the check box to enable automatic guest customization.<br>If you do not check this check box, then Cisco UCS Director does not configure the DNS, Network, and Guest OS properties. |
| <b>Post Provisioning Custom Actions</b> check box     | Check the check box to enable execution of an orchestration workflow after VM provisioning.   |
| <b>Workflow</b> drop-down list                        | Choose a defined workflow for provisioning.<br><b>Note</b> This option appears when <b>Post Provisioning Custom Actions</b> is checked.   |
| <b>Virtual Storage Catalog Enable</b> check box       | Check the check box to select storage entries from the Virtual Storage catalog.   |
| <b>Virtual Storage Catalog</b> drop-down list         | Select a storage entry from the catalog.<br><b>Note</b> This option appears when the <b>Virtual Storage Catalog Enable</b> check box is checked.  |
| <b>Cost Computation</b>                               |   |
| <b>Charge Duration</b> drop-down list                 | Choose <b>Hourly</b> or <b>Monthly</b> .  |
| <b>Active VM Application Cost</b> field               | The cost for the application that is included in the template.<br><b>Note</b> Not supported in the RHEV KVM Connector.  |
| <b>Inactive VM Application Cost</b> field             | The cost to this catalog of a VM in inactive state, per hour or month.<br><b>Note</b> Not supported in the RHEV KVM Connector.  |
| <b>VM Life Cycle Configuration</b>                    |   |
| <b>Lease Time</b> check box                           | Check the check box to define a lease time (in days and hours).   |
| <b>Day</b> field                                      | Specify the number of days.<br>This field is visible only when you check the <b>Lease Time</b> check box  |
| <b>Hours</b> field                                    | Specify the number of hours.<br>This field is visible only when you check the <b>Lease Time</b> check box   |

| Name   | Description   |
|--|---|
| <b>Hide end user lease configuration</b> check box | Check the check box to prevent service end users from configuring a lease time for VMs. |
| <b>Hide end user VM provision later</b> check box  | Check the check box to prevent service end users from provisioning VMs at a later time. |

**Step 13** Click Next.

**Step 14** In the VM Access pane, complete the following fields:

| Name                                       | Description   |
|--|---|
| <b>Web Access Configuration</b>            |   |
| <b>Enable</b> check box                    | Check the check box to enable web access to the VM. By default, this check box is unchecked which means that web access to the VM is disabled.                        |
| <b>URL</b> field                           | The URL of the VM.<br><br><b>Note</b> This option appears when <b>Web Access Configuration</b> is checked.  |
| <b>Label</b> field                         | The label that is defined for this URL<br><br><b>Note</b> This option appears when <b>Web Access Configuration</b> is checked.  |
| <b>Remote Desktop Access Configuration</b> |   |
| <b>Enable</b> check box                    | Check the check box to enable remote desktop access to the VM. By default, this check box is unchecked, which means that remote desktop access to the VM is disabled. |
| <b>Server</b> field                        | The IP address of the server for remote access.<br><br><b>Note</b> This option appears when <b>Remote Desktop Access Configuration</b> is checked.                    |
| <b>Port</b> field                          | The port number on the server for remote access.<br><br><b>Note</b> This option appears when <b>Remote Desktop Access Configuration</b> is checked.                   |
| <b>Label</b> field                         | The label that is defined for this remote access.<br><br><b>Note</b> This option appears when <b>Remote Desktop Access Configuration</b> is checked.                  |
| <b>VMRC Console Configuration</b>          |   |

| Name             | Description   |
|------------------|---|
| Enable check box | Check the check box to enable VMRC console access to the VM. By default, this check box is unchecked, which means that the VMRC console access to the VM is disabled. |

**Step 15** Click **Next**.

**Step 16** Review the catalog information in the **Summary** page.

**Step 17** Click **Submit**.

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## Creating a VM Disk

You can add an additional disk with a custom size to provisioned or discovered VMs. Use the **Create VM disk** option that is available through the **VM** action button.

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

**Step 2** In the navigation pane, choose a cloud name.

**Step 3** Choose the **VMs** tab.

**Step 4** Choose a VM.

**Step 5** Click the down arrow button on the right side of the toolbar, and choose **Create VM Disk** from the drop-down list.

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

| Name   | Description  |
|--|--|
| <b>VM Name</b> field                                     | The name of the VM.<br>Once entered, the VM name cannot be edited.   |
| <b>New Disk Size (GB)</b> field                          | The disk size for the VM, in GB.   |
| <b>Select Disk Type</b> drop-down list                   | Choose the disk type. It can be one of the following: <ul style="list-style-type: none"> <li>• <b>System</b></li> <li>• <b>Swap</b></li> <li>• <b>Data</b></li> <li>• <b>Database</b></li> <li>• <b>Log</b></li> </ul> |
| <b>Select Datastore/Datastore Cluster</b> drop-down list | Specify if the VM disk should be created from a datastore or a datastore cluster.  |

| Name                           | Description  |
|--------------------------------|--|
| Select Datastore field         | <p>Click <b>Select</b> and choose which datastore you want to use to create the VM disk.</p> <p><b>Note</b> The available datastores depend upon the storage policy associated with the VDC. Only datastores that meet the criteria specified in the storage policy are available for the VM disk.</p> <p>This field is only available if you specify that the VM disk should be created from a datastore.</p>                                 |
| Select Datastore Cluster field | <p>Click <b>Select</b> and choose which datastore cluster you want to use to create the VM disk.</p> <p><b>Note</b> The available datastore clusters depend upon the storage policy associated with the VDC. Only datastore clusters that meet the criteria specified in the storage policy are available for the VM disk.</p> <p>This field is only available if you specify that the VM disk should be created from a datastore cluster.</p> |
| Thin Provision check box       | <p>Check the check box to add a thin provisioned disk to the VM.</p> <p><b>Note</b> Thin provisioning enables dynamic allocation of physical storage capacity to increase VM storage utilization.</p>  |
| Compute New Disk Cost option   | This option calculates the cost of the new disk based on the input you specified, and displays it in the dialog box.   |

**Step 7** Click **Create**.

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