Cisco UCS Director UCS Central Management Guide, 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.

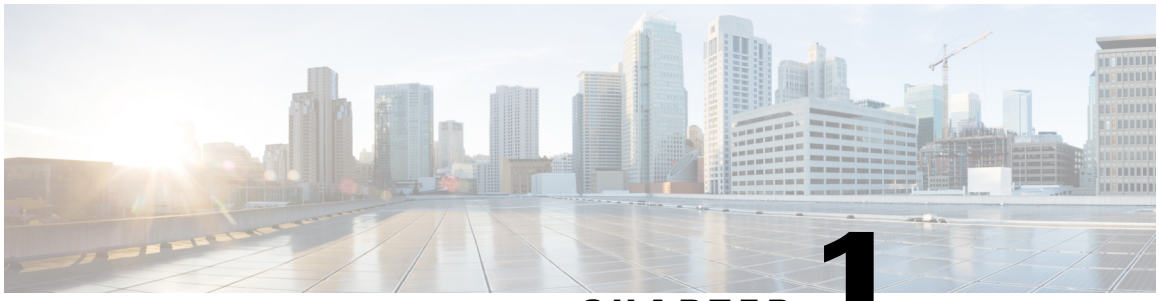
Documentation Feedback

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

This chapter contains the following topics:

New and Changed Information for this Release

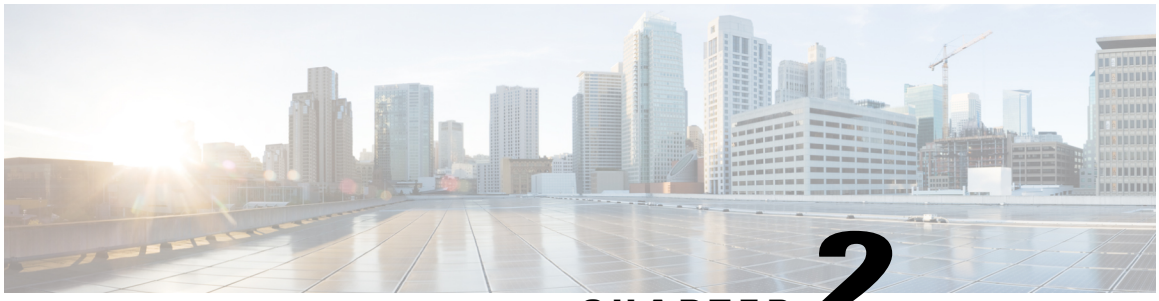
The following table provides an overview of the significant changes to this guide for this current release.

Table 1: New and Changed Features in Cisco UCS Director, Release 6.0(1.0)

Feature	Description	Where Documented
Server Pool Qualification Policy	Server Pool Qualification policy helps qualify servers based on the servers available in the system.	Server Pool Qualification Policy, on page 58

Feature	Description	Where Documented
Addition of new tasks	The following tasks have been added: • Associate Storage Profile to Service Profile • Disassociate Storage Profile from Service Profile • Delete LUNs from server • Set JBOD to Unconfigured Good • Select Global Service Profile • Bind Global Service Profile Template vNIC to Template • UnBind Global Service Profile Template vNIC from Template • Add UCS Central Organization • Delete UCS Central Organization • Clone Global Service Profile Template • Delete UCS Central Server Pool • Delete UCS Central Server Pool Qualification • Add a VSAN from Global Service Profile Template • Delete a VSAN from Global Service Profile Template • Modify Global Service Profile Template for UCS Central • Delete Global Service Profile Template in UCS Central • Create UCS Central Server Pool • Add UCS Servers to UCS Central Server Pool • Delete UCS Servers from UCS Central Server Pool	Task Library

Feature	Description	Where Documented
Modification of existing tasks	The following existing tasks have been modified: • Create Global Service Profile from Template • Select UCS Global Service Profile • Add UCS Central VNIC Template • Delete vNIC from Global Service Profile • Bind Global Service vNIC to Template • Unbind Global Service Profile vNIC from Template • Select UCS Global Service Profile	Task Library



CHAPTER 2

Overview

This chapter contains the following sections:

Cisco UCS Central Management through Cisco UCS Director

Cisco UCS Director uses orchestration to automate some of the steps required to configure the Cisco UCS domains registered with Cisco UCS Central and to provide a statistical analysis of the data.

When you add a Cisco UCS Central account, Cisco UCS Director performs an inventory collection on the Cisco UCS Central configuration. During inventory collection, Cisco UCS Director discovers and imports the existing configuration, including the following:

- Domain groups
- Domain group policies
- Registration policies
- Each registered Cisco UCS domain and the Cisco UCS Manager inventory for that Cisco UCS domain, including the following:
  - Fabric interconnects
  - Chassis
  - Servers

After you add a Cisco UCS Central account and its inventory collection is complete, you can use Cisco UCS Director to register more Cisco UCS Manager accounts with that Cisco UCS Central account, if desired.

Cisco UCS Director provides you with complete visibility into Cisco UCS Central and the registered Cisco UCS domains. In addition, you can use Cisco UCS Director to manage and configure those Cisco UCS domains.

Cisco UCS Central Tasks You Can Perform in Cisco UCS Director

You can use Cisco UCS Director to perform management, monitoring, and reporting tasks for physical and virtual devices within Cisco UCS domains registered with Cisco UCS Central.

Configuration and Administration

You can create and configure Cisco UCS software components in Cisco UCS Director, such as:

- Global and local service profiles
- Global and local policies

Monitoring and Reporting

You can also use Cisco UCS Director to monitor and report on the registered Cisco UCS domains and their components, including:

- Service profile association
- vNICs
- vHBAs
- Cisco UCS hardware, including fabric interconnects, chassis, and servers

Cisco UCS Central Tasks You Cannot Perform in Cisco UCS Director

You cannot use Cisco UCS Director to perform certain system management tasks within a Cisco UCS domain registered with Cisco UCS Central, such as the following:

- Creation of some policies
- Firmware upgrades
- User management

Read-Only Policies

You cannot create all policies in a Cisco UCS Central account. Cisco UCS Director provides a read-only view of those policies in the details of the organization that includes them. Create these read-only policies in a Cisco UCS Manager account that includes the organization.

The read-only policies include the following:

- Dynamic vNIC connection policies

- Ethernet and Fibre Channel adapter policies
- IPMI access profiles
- Local disk configuration policies
- Maintenance policies
- Network control policies
- Power control policies
- QoS policies
- Scrub policies
- Serial over LAN policies
- Server pool policies
- Server pool policy qualifications
- Threshold policies
- vNIC/vHBA placement policies

Cisco UCS Central Orchestration Tasks

Cisco UCS Director includes orchestration features that allow you to automate configuration and management of tasks performed by Cisco UCS Central in one or more workflows. The same workflow can include Cisco UCS Central, Cisco UCS Manager, network, and storage tasks.

For more information about orchestration and examples of workflows in Cisco UCS Director, see the Cisco UCS Director Orchestration Guide.

Location of Orchestration Tasks

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

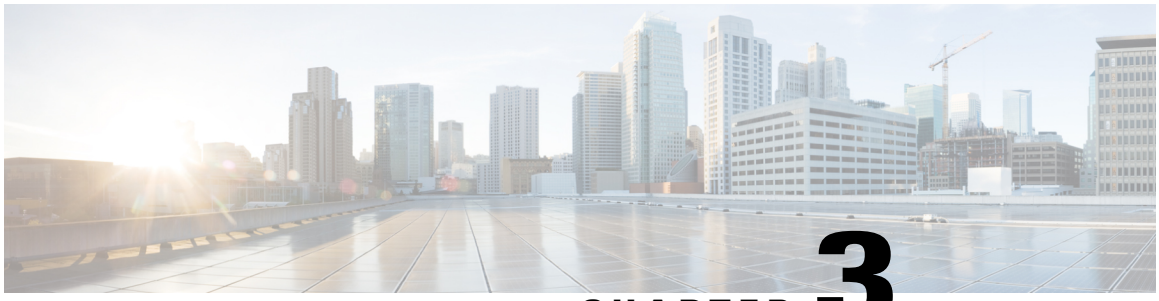
- **Policies** > **Orchestration** > **Workflows**
- `http://IP_address/app/cloudmgr/onlinedocs/cloupiaTaskLib.html` where *IP_address* is the IP address of Cisco UCS Director.

Types of Orchestration Tasks

The Cisco UCS Central orchestration tasks include the following:

- Group assignment
- Domain groups
- Cisco UCS Manager registration
- VLANs

- Global service profiles
- Global service profile templates
- Time zones



CHAPTER 3

Configuring Cisco UCS Central Accounts

This chapter contains the following sections:

Multi-Domain Managers

A multi-domain manager is an application that can manage more than one domain. For example, Cisco UCS Central is a multi-domain manager that manages one or more registered Cisco UCS domains.

Cisco UCS Central Accounts

Each Cisco UCS Central account represents a single Cisco UCS Central, plus all the Cisco UCS domains registered with that Cisco UCS Central.

When you create a Cisco UCS Central account all Cisco UCS domains that are registered with that Cisco UCS Central, and their related Cisco UCS Manager accounts, are imported into Cisco UCS Director. You can assign one or more of those Cisco UCS Manager accounts from the Cisco UCS Central account to a pod if needed. You can also register a Cisco UCS Manager account with a Cisco UCS Central account.

Note Cisco UCS Central is a multi-domain manager; you do not create the Cisco UCS Central account in a pod.

Adding a Cisco UCS Central Account

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

Step 2 On the **Multi-Domain Managers** tab, click **Add**.

Step 3 In the **Multi-Domain Manager Account** dialog box, complete the following fields:

Name	Description
Account Name field	A unique name that you assign to this account.
Description field	(Optional) A description of this account.
Account Type drop-down list	Choose the account type. You must choose **UCS Central**.
Server Address field	The IP address of Cisco UCS Central.
User ID field	The username that this account will use to access Cisco UCS Central. This username must be a valid account in Cisco UCS Central. **Note** When creating a UCS Central account integrated with LDAP, the username must be in the following format: **ucs-<*Domain Name*>*username*** For example: ucs-vxendomain.com\jdoe123
Password field	The password associated with the username.
Transport Type drop-down list	Choose the transport type that you want to use for this account. This can be one of the following: • **http** • **https**
Port field	The port used to access Cisco UCS Central.
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.

Step 4 Click **Add**.

Cisco UCS Director tests the connection to Cisco UCS Central. If that test is successful, it adds the Cisco UCS Central account and discovers all infrastructure elements and registered Cisco UCS domains in that

account, including chassis, servers, fabric interconnects, service profiles, and pools. This discovery process and inventory collection cycle takes approximately five minutes to complete.

The polling interval configured on the **Infrastructure System Parameters** tab specifies the frequency of inventory collection.

Testing the Connection to a Physical Account

You can test the connection at any time after you add an account to a pod.

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

Step 2 Click the tab for the type of account that you want to test.
For example, click the **Physical Accounts** tab or the **Multi-Domain Managers** tab.

Step 3 In the table, click the row of the account for which you want to test the connection.

Step 4 Click **Test Connection**.

Step 5 When the connection test has completed, click **Close**.

What to Do Next

If the connection fails, verify the configuration of the account, including the username and password. If the username and password are correct, determine whether there is a network connectivity problem.

Verifying the Discovery of a Cisco UCS Central Account

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, click **UCS Central Accounts**.

Step 4 In the right pane, click the row in the table for the account that you want to verify.

Step 5 Click **View Details**.
Cisco UCS Director displays a set of tabs that contain information about the components of that account that it has discovered.

Assigning a Cisco UCS Domain to a Pod

After you assign a Cisco UCS domain to a pod, Cisco UCS Director displays it as a Cisco UCS Manager account, and you can configure, monitor, and obtain reports on that account.

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **All UCS Domains** tab. Then click the row in the table for the domain that you want to assign to a pod.

Step 5 Click **Assign to Pod**.

Step 6 In the **Assign to Pod** dialog box, complete the following fields:

Name	Description
Pod drop-down list	Choose the pod to which this account belongs.
Authentication Type drop-down list	Choose the type of authentication to be used for this account. This can be one of the following: • **Locally Authenticated—**A locally authenticated user account is authenticated directly through the fabric interconnect. It is enabled or disabled anyone with administrator or AAA privileges. • **Remotely Authenticated—**A remotely authenticated user account is any user account that is authenticated through LDAP, RADIUS, or TACACS+.
Server Management drop-down list	Choose how you want to have the servers in this account managed. This can be one of the following: • **All Servers—**All servers are managed by Cisco UCS Director. This option is the default. If you choose this option, all servers are added in the Managed state. • **Selected Servers—**Only selected servers are managed by Cisco UCS Director. You can add and remove servers from the managed server list as needed. If you choose this option, all servers are added in the Unmanaged state. For more information, see the Cisco UCS Director Management Guide for Cisco UCS Manager for the appropriate release.
Account Name field	A unique name that you assign to this account.
Description field	(Optional) A description of this account.

Name	Description
User ID field	The username that this account uses to access Cisco UCS Manager. This username must be a valid account in Cisco UCS Manager.
Password field	The password associated with the username.
Transport Type drop-down list	Choose the transport type that you want to use for this account. This can be one of the following: • **HTTP** • **Https**
Port field	The port used to access Cisco UCS Manager.
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.
Service Provider field	(Optional) The name of the service provider associated with this account, if any.

Step 7 Click **Submit**.

Unassigning a Cisco UCS Domain from a Pod

When you unassign a Cisco UCS domain from a pod, Cisco UCS Director does not delete the related Cisco UCS Manager account. If you want to delete the account, use **Administration** > **Physical Accounts**.

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **All UCS Domains** tab. Then click the row in the table for the domain that you want to unassign from a pod.

Step 5 Click **Unassign from Pod**.

Step 6 In the **UCSM Account** dialog box, click **Submit**.

Organizations

Organizations in a Multitenancy Environment

Multi-tenancy allows you to divide the large physical infrastructure of an Cisco UCS domain into logical entities known as organizations. As a result, you can achieve a logical isolation between organizations without providing a dedicated physical infrastructure for each organization.

You can assign unique resources to each tenant through the related organization in the multi-tenant environment. These resources can include different policies, pools, and quality of service definitions. You can also implement locales to assign or restrict user privileges and roles by organization, if you do not want all users to have access to all organizations.

If you set up a multi-tenant environment, all organizations are hierarchical. The top-level organization is always root. The policies and pools that you create in root are system-wide and are available to all organizations in the system. However, any policies and pools created in other organizations are only available to organizations that are above it in the same hierarchy. For example, if a system has organizations named Finance and HR that are not in the same hierarchy, Finance cannot use any policies in the HR organization, and HR cannot access any policies in the Finance organization. However, both Finance and HR can use policies and pools in the root organization.

If you create organizations in a mult-itenant environment, you can also set up one or more of the following for each organization or for a sub-organization in the same hierarchy:

- Resource pools
- Policies
- Service profiles
- Service profile templates

The root organization is always the top level organization.

Creating an Organization

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **Organizations** tab.

Step 5 Click **Add**.

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

a) In the **Name** field, enter a name for the organization.

b) In the **Description** field, enter a description for the organization.

c) From the **Parent Organization** drop-down list, choose the organization under which this organization resides.

Time Zones

Cisco UCS requires a domain-specific time zone setting and an NTP server to ensure the correct time displays in . If you do not configure time zones, the time might not display correctly.

In addition, if your environment includes Cisco UCS Central, you must configure an NTP server and the correct time zone in Cisco UCS Manager and Cisco UCS Central to ensure that they are in sync. If the time and date in the Cisco UCS domain and Cisco UCS Central are out of sync, the registration might fail.

Adding a Time Zone

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **Time Zones** tab.

Step 5 Click **Add**.

Step 6 In the **Add Time Zone** dialog box, do the following:

a) In the **NTP Server Name** dialog box, enter the IP address or hostname of the NTP server for this time zone.

b) Click **Submit**.

CHAPTER 4

Configuring Domain Groups

This chapter contains the following sections:

Domain Groups

Cisco UCS Central creates a hierarchy of Cisco UCS domain groups for managing multiple Cisco UCS domains. You will have the following categories of domain groups in Cisco UCS Central:

- **Domain Group —** A group that contains multiple Cisco UCS domains. You can group similar Cisco UCS domains under one domain group for simpler management.
- **Ungrouped Domains —** When a new Cisco UCS domain is registered in Cisco UCS Central, it is added to the ungrouped domains. You can assign the ungrouped domain to any domain group.

If you have created a domain group policy, and a new registered Cisco UCS domain meets the qualifiers defined in the policy, it will automatically be placed under the domain group specified in the policy. If not, it will be placed in the ungrouped domains category. You can assign this ungrouped domain to a domain group.

Each Cisco UCS domain can only be assigned to one domain group. You can assign or reassign membership of the Cisco UCS domains at any time. When you assign a Cisco UCS domain to a domain group, the Cisco UCS domain will automatically inherit all management policies specified for the domain group.

Before adding a Cisco UCS domain to a domain group, make sure to change the policy resolution controls to local in the Cisco UCS domain. This will avoid accidentally overwriting service profiles and maintenance policies specific to that Cisco UCS domain. Even when you have enabled auto discovery for the Cisco UCS

domains, enabling local policy resolution will protect the Cisco UCS domain from accidentally overwriting policies.

Important

- Make sure to create a separate domain groups for all modular server domains. Also make sure the modular server domain groups are not hierarchical.
- You must create separate infrastructure firmware policy for modular domains in Cisco UCS Central. The infrastructure firmware policies must be unique to modular servers. This will prevent any firmware policy resolution issues with other domain groups.

Creating a Domain Group

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 Click the **Domain Groups** tab.

Step 5 Click **Add**.

Step 6 In the **Domain Group** dialog box, do the following:

a) In the **Name** field, enter a unique name for the domain group.

b) (Optional) In the **Description** field, enter a description for the domain group.

c) In the **Parent Domain Group** area, check the check boxes for the domains that you want to add to the domain group.

d) Click **Submit**.

Adding a Cisco UCS Domain to a Domain Group

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **Ungrouped UCS Domains** tab. Then click the row in the table for the domain that you want to add to a domain group.

Step 5 Click **Change Group Membership**.

Step 6 In the **Select Domain Group** dialog box, do the following:

a) Check the check box for the domain group to which you want to add the domain.

b) Click **Submit**.

Changing Domain Group Membership for a Cisco UCS Domain

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **Ungrouped UCS Domains** tab. Then click the row in the table for the domain for which you want to change the domain group.

Step 5 Click **Change Group Membership**.

Step 6 In the **Select Domain Group** dialog box, do the following:

a) Uncheck the check box for the domain group from which you want to remove the domain.

b) Check the check box for the domain group to which you want to add the domain.

c) Click **Submit**.

Removing a Cisco UCS Domain from a Domain Group

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **All UCS Domains** tab. Then click the row in the table for the domain that you want to remove from a domain group.

Step 5 Click **Ungroup Domain**.

Step 6 In the **UCSM Domain** dialog box, click **Submit**.

Creating a Registration Policy

The registration policy contains the domain group policy qualifications for the domain group policies.

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 Click the **Registration Policies** tab.

Step 5 Click **Add**.

Step 6 On the **Registration Policy Specification** page of the **Create a Registration Policy Specification** dialog box, enter a unique name and description for the policy.

Step 7 On the **Addresses** page of the **Create a Registration Policy Specification** dialog box, do the following:

a) Click +. This displays the **Add Entry to** dialog box.
b) In the **Add Entry to** dialog box, enter the minimum and maximum IP addresses and click **Submit**.
c) After you have added all desired address qualifications, click **Next**.

If you do not want to include an address qualification in the registration policy, you can click **Next**.

Step 8 On the **Sites** page of the **Create a Registration Policy Specification** dialog box, do the following:

a) Click +. This displays the **Add Entry to Sites**.
b) In the **Add Entry to Sites** dialog box, enter the **Site Name** and **Regex** and click **Submit**.
c) After you have added all desired site qualifications, click **Next**.

If you do not want to include a site qualification in the registration policy, you can click **Next**.

Step 9 On the **Owners** page of the **Create a Registration Policy Specification** dialog box, do the following:

a) Click +. This displays the **Add Entry to Owners**dialog box.
b) In the **Add Entry to Owners** dialog box, enter the **Owner Name** and **Regex** and click **Submit**.
c) After you have added all desired owner qualifications, click **Next**.

If you do not want to include an owner qualification in the registration policy, you can click **Next**.

Step 10 Click **Submit**.

Creating a Domain Group Policy

Before You Begin

Create at least one registration policy with domain group policy qualifications that you can include in this policy.

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 Click the **Domain Group Policies** tab.

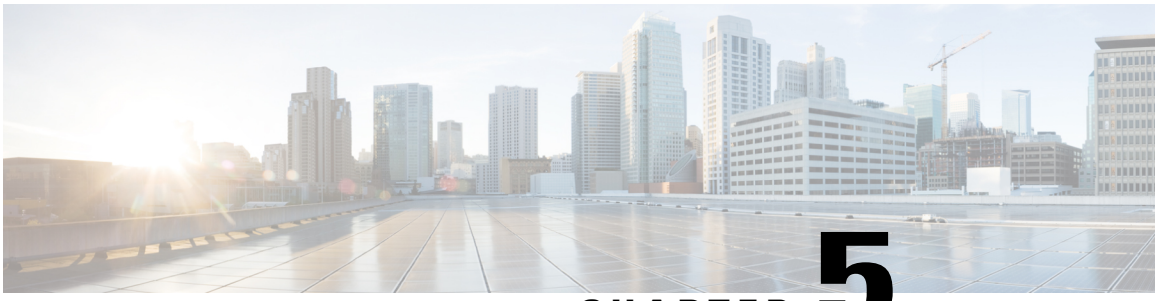
Step 5 Click +. This displays the **Add Domain Group Policy** dialog box.

Step 6 In the **Add Domain Group Policy** dialog box, enter a unique name and description for the domain group policy.

Step 7 In the **Domain Group** area, check the check boxes for the domains that you want to add to the domain group policy.

Step 8 In the **Domain Group Policy Qualification** area, check the check boxes for the qualifications that you want to add to the domain group policy.

Step 9 Click **Submit**.



CHAPTER 5

Configuring Network Connections

This chapter contains the following sections:

Global VLANs

You can define global VLANs in the domain group root, or a domain group below the root. Global VLANs can only be common or global. You cannot assign them to a specific fabric interconnect.

Resolution of global VLANs takes place prior to the deployment of global service profiles. If a global service profile references a global VLAN, and that VLAN does not exist, deployment of the global service profile fails due to insufficient resources. All global VLANs created in a Cisco UCS Central account must be resolved before deploying the global service profile.

All global VLANs configured in a Cisco UCS Central account are common to the domains in which they are created. However, organization permissions must first be assigned before the Cisco UCS domains that are part of the organizations can consume the resources. By default, no organization permissions are assigned when you create a global VLAN. Once organization permissions have been granted to a VLAN, it becomes visible to those organizations. It is also available to be referenced in service profiles that are part of those organizations.

A global VLAN is visible to a Cisco UCS Manager account only if you deploy a global service profile that references the VLANs. Once a VLAN that is deployed with a global service profile becomes available in a Cisco UCS Manager account, you can include it in a local service profile and policy. You cannot turn a global VLAN into a local VLAN.

A global VLAN is not deleted when you delete a global service profile that references it. Delete the global VLAN from the Cisco UCS Central account.

Creating a Global VLAN

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **Common VLANs** tab.

Step 5 Click **Add**.

Step 6 In the **Add VLAN** dialog box, do the following:

a) In the **VLAN Name** field, enter a unique name for the VLAN.
The VLAN name is case-sensitive.

b) In the **VLAN ID** field, enter a unique identifier to be assigned to the network.
A VLAN ID can:

- Be between 1 and 3967
- Be between 4048 and 4093
- Overlap with other VLAN IDs already defined in other domain groups

c) In the **Domain Group** field, check the check box for the domain group in which you want to create the global VLAN.

d) Click **Submit**.

Publishing a Global VLAN

Global VLANs can be published to the associated domains, and those VLANs are then available at domain level. For a VLAN associated to a domain group (x), it can be published to any of the domains linked with the same domain group (x).

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **Common VLANs** tab.

Step 5 From the list of VLANs, select the VLAN to be published.

Step 6 In the right pane, click the **Publish to USC Domain** tab.

Step 7 In the **Publish VLAN to USC Domain**, click the **Select** button.

Step 8 From the Select list, click the box to the left of the desired domain and click the **Select** button.

Step 9 In the **Publish VLAN to USC Domain**, click the **Submit** button.

Modifying Organization Permissions for a Global VLAN

Step 1 On the menu bar, choose **Physical** > **Compute**.
Step 2 In the left pane, expand **Multi-Domain Managers**.
Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.
Step 4 In the right pane, click the **Common VLANs** tab.
Step 5 In the right pane, click the row in the table for the global VLAN for which you want to modify organization permissions.
Step 6 Click **Modify Org Permissions**.
Step 7 In the **Organization List** dialog box, check the check boxes for the organizations in which you want to include the global VLAN.
Step 8 Click **Submit**.

IP Pools

IP pools are a collection of IP addresses. You can use IP pools in Cisco UCS Central in one of the following ways:

- For external management of Cisco UCS Manager servers.
- For iSCSI boot initiators.
- For both external management and iSCSI boot initiators in Cisco UCS Manager

Creating an IP Pool

Step 1 On the menu bar, choose **Physical** > **Compute**.
Step 2 In the left pane, expand **Multi-Domain Managers**.
Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.
Step 4 In the right pane, click the **Organizations** tab.
Step 5 Click the organization in which you want to create the pool and then click **View Details**.
Step 6 Click the **IP Pools** tab.
Step 7 Click **Add**.
Step 8 In the **IP Pool** screen, enter a name and description for the IP pool.
Step 9 In the **IPv4 Block**, enter the following:

Name	Description
From field	The first IP address in the block.

Name	Description
Size field	The number of IP addresses in the block.
Subnet Mask field	The subnet mask associated with the IP addresses in the block.
Default Gateway field	The default gateway associated with the IP addresses in the block.
Primary DNS field	The primary DNS server that this block of IP addresses is to access.
Secondary DNS	The secondary DNS server that this block of IP addresses is to access.
Scope	Whether the IP addresses in the block can be assigned to one or more Cisco UCS domains registered with Cisco UCS Central. This can be one of the following: **public** -The IP addresses in the block can be assigned to only one registered Cisco UCS domain. **private** -The IP addresses in the block can be assigned to multiple registered Cisco UCS domains.
ID Range Qualification Policy	Optional

Step 10 In the **IPv6 Block**, enter the following:

Name	Description
From field	The first IP address in the block.
Size field	The number of IP addresses in the block.
Subnet Mask field	The subnet mask associated with the IP addresses in the block.
Default Gateway field	The default gateway associated with the IP addresses in the block.
Primary DNS field	The primary DNS server that this block of IP addresses is to access.
Secondary DNS	The secondary DNS server that this block of IP addresses is to access.

Name	Description
Scope	Whether the IP addresses in the block can be assigned to one or more Cisco UCS domains registered with Cisco UCS Central. This can be one of the following: **public** -The IP addresses in the block can be assigned to only one registered Cisco UCS domain. **private** -The IP addresses in the block can be assigned to multiple registered Cisco UCS domains.
ID Range Qualification Policy	Optional

Step 11 Click **Submit**.

MAC Pools

A MAC pool is a collection of network identities, or MAC addresses, that are unique in their Layer 2 environment and are available to be assigned to vNICs on a server. If you use MAC pools in service profiles, you do not have to manually configure the MAC addresses to be used by the server associated with the service profile.

In a system that implements multitenancy, you can use the organizational hierarchy to ensure that MAC pools can be used only by specific applications or business services. Cisco UCS uses the name resolution policy to assign MAC addresses from the pool.

To assign a MAC address to a server, you must include the MAC pool in a vNIC policy. The vNIC policy is then included in the service profile assigned to that server.

You can specify your own MAC addresses or use a group of MAC addresses provided by Cisco.

Creating a MAC Pool

Step 1 On the menu bar, choose **Physical** > **Compute**.
Step 2 In the left pane, expand **Multi-Domain Managers**.
Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.
Step 4 In the right pane, click the **Organizations** tab.
Step 5 Click the organization in which you want to create the pool and then click **View Details**.
Step 6 Click the **MAC Pools** tab.
Step 7 Click **Add**.
Step 8 In the **Add MAC Pool** dialog box, complete the following fields:

Name	Description
Name field	A unique name for the pool.
Description field	A description for the pool.
First MAC Address field	The first MAC address in the block.
Size field	The number of MAC addresses in the block.
ID Range Qualification Policy drop-down list	Choose the ID Range Qualification Policy.

Step 9 Click **Submit**.

Adding an Address Block to a MAC Pool

Step 1 On the menu bar, choose **Physical** > **Compute**.
Step 2 In the left pane, expand **Multi-Domain Managers**.
Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.
Step 4 In the right pane, click the **Organizations** tab.
Step 5 Click the organization in which you want to modify the pool and then click **View Details**.
Step 6 Click the **MAC Pools** tab.
Step 7 Click the pool to which you want to add a block of addresses and then click **Create a Block of MAC Addresses**.
Step 8 In the **Add MAC Pool Block** dialog box, complete the following fields:

Name	Description
First MAC Address field	The first MAC address in the block.
Size field	The number of MAC addresses in the block.
IP Range Qualification Policy drop-down list	Choose the IP Range Qualification Policy.

Step 9 Click **Submit**.

vNIC Template

This policy defines how a vNIC on a server connects to the LAN. This policy is also referred to as a vNIC LAN connectivity policy.

A VM-FEX port profile is not automatically created with the correct settings when you create a vNIC template. If you want to create a VM-FEX port profile, you must configure the target of the vNIC template as a VM.

You need to include this policy in a service profile for it to take effect.

Note If your server has two Emulex or QLogic NICs (Cisco UCS CNA M71KR-E or Cisco UCS CNA M71KR-Q), you must configure vNIC policies for both adapters in your service profile to get a user-defined MAC address for both NICs. If you do not configure policies for both NICs, Windows still detects both of them in the PCI bus. Because the second Ethernet interface is not part of your service profile, Windows assigns it a hardware MAC address. If you then move the service profile to a different server, Windows sees additional NICs because one NIC did not have a user-defined MAC address.

Creating a vNIC Template

Before You Begin

One or more of the following resources must exist:

- Global VLAN
- MAC pool
- QoS policy
- LAN pin group

- Statistics threshold policy

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **Organizations** tab.

Step 5 Click the organization in which you want to create the policy and then click **View Details**.

Step 6 Click the **vNIC Templates** tab.

Step 7 Click **Add**.

Step 8 In the **Add vNIC Template** dialog box, enter a unique name and description for the policy.

Step 9 From the **Fabric ID** drop-down list, choose the fabric interconnect that you want to associate with vNICs created from this template.

Step 10 Check the **Enable Failover** check box if you want vNICs created from this template to be able to access the other fabric interconnect if the chosen one is unavailable.

Note Do not enable vNIC fabric failover under the following circumstances:

- If the Cisco UCS domain is running in Ethernet Switch Mode. vNIC fabric failover is not supported in that mode. If all Ethernet uplinks on one fabric interconnect fail, the vNICs do not fail over to the other.
- If you plan to associate one or more vNICs created from this template with a server that has an adapter which does not support fabric failover, such as the Cisco UCS 82598KR-CI 10-Gigabit Ethernet Adapter. If you do so, a configuration fault is generated when you associate the service profile with the server.

Step 11 Check one or both of the following **Target** check boxes to determine whether or not a VM-FEX port profile is automatically created with the appropriate settings for the vNIC template:

- **Adapter—**The vNICs apply to all adapters. No VM-FEX port profile is created if you choose this option.
- **VM—**The vNICs apply to all virtual machines. A VM-FEX port profile is created if you choose this option.

Step 12 From the **Template Type** drop-down list, choose one of the following:

- **Initial Template—**vNICs created from this template are not updated if the template changes.
- **Updating Template—**vNICs created from this template are updated if the template changes.

Step 13 In the **VLANs** area, do the following to select the VLAN to be assigned to vNICs created from this template:

a) Click +. This displays the **Add Entry to VLANs**dialog box.

b) In the **Add Entry to VLANs** dialog box, complete the following fields and click **Submit**:

- **Name** drop-down list**—**Choose the VLAN that you want to associate with the vNIC template.
- **Set as Native VLAN** check box**—**Check the check box if you want this VLAN to be the native VLAN for the port.

Step 14 To associate policies with vNICs created from this template, complete the following fields:

Name	Description
MTU field	The MTU, or packet size, that vNICs created from this vNIC template must use. Enter an integer between 1500 and 9216. **Note** If the vNIC template has an associated QoS policy, the MTU specified here must be equal to or less than the MTU specified in the associated QoS system class. If this MTU value exceeds the MTU value in the QoS system class, packets might be dropped during data transmission.
MAC Pool drop-down list	Choose the MAC address pool that vNICs created from this vNIC template should use.
QoS Policy drop-down list	Choose the quality of service policy that vNICs created from this vNIC template should use.
Network Control Policy drop-down list	Choose the network control policy that vNICs created from this vNIC template should use.
Pin Group drop-down list	Choose the LAN pin group that vNICs created from this vNIC template should use.
Stats Threshold Policy drop-down list	Choose the statistics collection policy that vNICs created from this vNIC template should use.

Step 15 Click **Submit**.

What to Do Next

Include the vNIC template in a vNIC policy.

Creating a vNIC Policy

Before You Begin

Make sure that at least one of the following exists in the Cisco UCS Central account and organization to which this policy applies:

- vNIC template

- Ethernet adapter policy

Step 1 On the menu bar, choose, **Policies > Physical Infrastructure Policies > UCS Central**

Step 2 Click the **vNIC Policy** tab.

Step 3 Click **Add**.

Step 4 In the **Create UCS Central vNIC Policy** dialog box, do the following:

a) In the **vNIC Name** field, enter a unique name for the policy.
b) From the **Account Name** drop-down list, choose a Cisco UCS Central account to which this policy applies.
c) From the **Organization** drop-down list, choose the organization to which this policy applies.
d) From the **vNIC Template** drop-down list, choose a vNIC template.
e) From the **Adapter Policy** drop-down list, choose an adapter policy.
f) Click **Submit.**

What to Do Next

Include the vNIC policy in a network policy.

LAN Connectivity Policy

LAN connectivity policies determine the connections and the network communication resources between the server and the LAN on the network. These policies use pools to assign MAC addresses to servers and to identify the vNICs that the servers use to communicate with the network.

Note We do not recommend that you use static IDs in connectivity policies because these policies are included in service profiles and service profile templates and can be used to configure multiple servers.

Creating a LAN Connectivity Policy

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **Organizations** tab.

Step 5 Click the organization in which you want to create the policy and then click **View Details**.

Step 6 Click the **LAN Connectivity Policies** tab.

Step 7 Click **Add**.

Step 8 In the **LAN Connectivity Policy** dialog box, enter a name and description for the policy.

Step 9 In the **vNICs** table, click **Add** and do the following:

a) Enter a name for the vNIC.
b) To use a vNIC template to create the vNIC, check the **Use vNIC Template** check box. Select the appropriate template and adapter policy from the drop-down lists that are displayed.
c) To create a new vNIC without a template, do not check the **Use vNIC Template** check box and complete the fields that are displayed.
For more information about these fields, see Creating a vNIC Template, on page 29.
d) Click **Submit**.

Repeat this step if you want to add more vNICs to the policy.

Step 10 After you have created all vNICs required for the policy, click **Submit**.

Network Policy

The network policy is a Cisco UCS Director policy that configures the connections between a server and the LAN, including the virtual network interface cards (vNICs) used by the server. Depending upon the configuration you choose, this policy can be used to configure two or more vNICs for the server. You can choose to create the vNICs in this policy or use a LAN connectivity policy to determine the vNIC configuration.

You must include this policy in a service profile and that service profile must be associated with a server for it to take effect.

Creating a Network Policy

Step 1 On the menu bar, choose **Policies > Physical Infrastructure Policies > UCS Central**

Step 2 Click the **Network Policy** tab.

Step 3 Click **Add**.

Step 4 In the **Create UCS Central Network Policy** dialog box, enter a name and description for the policy.

Step 5 Complete the following fields to specify the Cisco UCS Central connections for the policy:

- **UCS Central Account Name** drop-down list—Choose the Cisco UCS Central account to which you want to add this policy.
- **UCS Central Organization Name** drop-down list—Choose the Cisco UCS Central organization to which you want to add this policy.

Step 6 If this policy is to be assigned to service profiles for servers that support dynamic vNICs, choose a dynamic vNIC connection policy from the **Dynamic vNIC Connection Policy** drop-down list.

Step 7 From the **LAN Connectivity Type** drop-down list, choose one of the following connectivity types:

Option	Description
Expert	Allows you to create up to 10 vNICs that the server can use to access the LAN. Continue with Step 8.

Option	Description
Simple	Allows you to create a maximum of two vNICs that the server can use to access the LAN. Continue with Step 9.
No vNICs	Does not allow you to create any vNICs. If you choose this option, any server associated with a service profile that includes this policy is not connected to the LAN. Continue with Step 11.
Hardware Inherited	Uses the vNICs assigned to the Ethernet adapter profile associated with the server. Continue with Step 11.
Use LAN Connectivity Policy	Uses a LAN connectivity policy to determine the LAN connectivity for the server. Continue with Step 10.

Step 8 If you chose the expert LAN option, do the following:

a) In the **Add vNIC** field, specify the number of vNICs that you want to add to the network policy. Up to 10 vNICs can be created.

b) From the **Template For vNIC1 ... vNIC10** drop-down list, choose a vNIC policy.

c) Continue with Step 11.

Step 9 If you chose the simple LAN option, do the following:

a) In the **vNIC0 (Fabric A)** area, complete the following fields:

- In the **vNIC0 Name** field, enter a unique name for the vNIC.
- From the **Select VLAN** drop-down list, choose the name of the VLAN with which this vNIC should be associated.

b) In the **vNIC1 (Fabric B)** area, complete the following fields:

- In the **vNIC1 Name** field, enter a unique name for the vNIC.
- From the **Select VLAN** drop-down list, choose the name of the VLAN with which this vNIC should be associated.

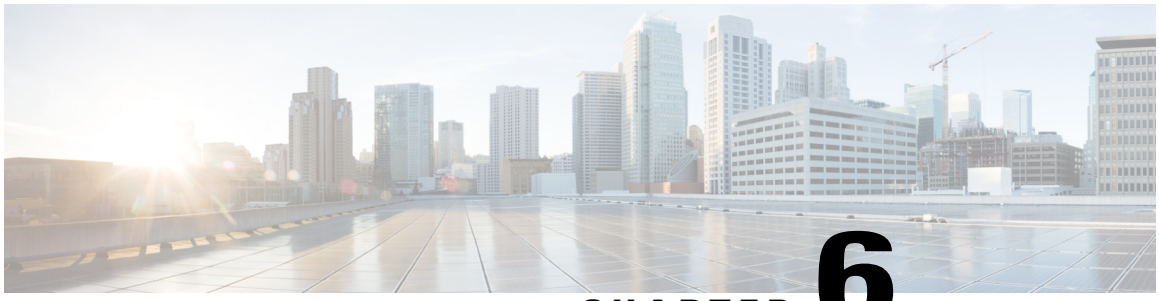
c) Continue with Step 11.

Step 10 If you chose the LAN connectivity policy option, choose the policy that you want to associate with the server from the **LAN Connectivity Policy** drop-down list.

Step 11 Click **Submit**.

What to Do Next

Include the network policy in a service profile.



CHAPTER 6

Configuring Storage Connections

This chapter contains the following sections:

Global VSANs

You can define global VSANs in the domain group root, or a domain group below the root. Global VSANs are fabric-interconnect specific and can be created for either Fabric A or Fabric B. A global VSAN cannot be a common VSAN.

Resolution of global VSANs takes place prior to the deployment of global service profiles. If a global service profile references a global VSAN, and that VSAN does not exist, deployment of the global service profile fails due to insufficient resources. All global VSANs created in a Cisco UCS Central account must be resolved before deploying the global service profile.

A global VSAN is not deleted when you delete a global service profile that references it. Delete the global VSAN from the Cisco UCS Central account.

A global VSAN is visible to a Cisco UCS Manager account only if you deploy a global service profile that references the VSANs. Once a VSAN that is deployed with a global service profile becomes available in a Cisco UCS Manager account, you can include it in a local service profile and policy. You cannot turn a global VSAN into a local VSAN.

Creating a Global VSAN

You can create a global VSAN with IDs from 1 to 4093, except for those in the following reserved ranges:

- If you plan to use FC switch mode in a Cisco UCS domain, do not configure VSANs with an ID in the range from 3040 to 4078.
- If you plan to use FC end-host mode in a Cisco UCS domain, do not configure VSANs with an ID in the range from 3840 to 4079.

Note FCoE VLANs in the SAN cloud and VLANs in the LAN cloud must have different IDs. Using the same ID for an FCoE VLAN in a VSAN and for a VLAN results in a critical fault and traffic disruption for all vNICs and uplink ports using that VLAN. Ethernet traffic is dropped on any VLAN which has an ID that overlaps with an FCoE VLAN ID.

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **VSANs** tab.

Step 5 Click **Add**.

Step 6 In the **Add VSAN** dialog box, do the following:

a) In the **VSAN Name** field, enter a unique name for the VSAN. The VSAN name is case-sensitive.
b) In the **VSAN ID** field, enter a unique identifier to be assigned to the network.
c) In the **Domain Group** field, check the check box for the domain group in which you want to create the global VSAN.
d) From the **Fabric ID** drop-down list, choose the fabric interconnect where you want to create the global VSAN.
e) In the **FCOE VLAN** field, enter the ID for the VLAN to be used for transporting the VSAN and its Fibre Channel packets.
f) Click **Submit**.

WWN Pools

WWNN Pools

A WWNN (World Wide Node Name) pool is a WWN (World Wide Name) pool that contains only WW (World Wide) node names. If you include a pool of WWNNs in a service profile, the associated server is assigned a WWNN from that pool. You can view the WWN blocks and initiators in a WWNN pool by double-clicking the pool in the **WWNN Pools** tab.

Creating a WWNN Pool

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **Organizations** tab.

Step 5 Click the organization in which you want to create the pool and then click **View Details**.

Step 6 Click the **WWNN Pools** tab.

Step 7 Click **Add**.

Step 8 In the **Add WWNN Pool** dialog box, complete the following fields:

Name	Description
Name field	A unique name for the pool.
Description field	A description for the pool.
From field	The first WWNN address in the block.
Size field	The number of WWNN addresses in the block.
ID Range Qualification Policy drop-down list	Choose the ID Range Qualification Policy.

Step 9 Click **Submit**.

WWXN Pools

A WWXN pool is a WWN pool that contains both WW node names and WW port names.

Creating a WWXN Pool

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **Organizations** tab.

Step 5 Click the organization in which you want to create the pool and then click **View Details**.

Step 6 Click the **WWXN Pools** tab.

Step 7 Click **Add**.

Step 8 In the **Add WWXN Pool** dialog box, complete the following fields:

Name	Description
Name field	A unique name for the pool.
Description field	A description for the pool.
From field	The first WWXN address in the block.
Size field	The number of WWXN addresses in the block.
ID Range Qualification Policy drop-down list	Choose the ID Range Qualification Policy.

Step 9 Click **Submit**.

WWPN Pools

A WWPN (World Wide Port Name) pool is a WWN pool that contains only WW port names. If you include a pool of WWPNs in a service profile, the port on each vHBA of the associated server is assigned a WWPN from that pool. You can view the WWN blocks and initiators in a WWPN pool by double-clicking the pool in the **WWPN Pools** tab.

Creating a WWPN Pool

Step 1 On the menu bar, choose **Physical** > **Compute**.
Step 2 In the left pane, expand **Multi-Domain Managers**.
Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.
Step 4 In the right pane, click the **Organizations** tab.
Step 5 Click the organization in which you want to create the pool and then click **View Details**.
Step 6 Click the **WWPN Pools** tab.
Step 7 Click **Add**.
Step 8 In the **Add WWPN Pool** dialog box, complete the following fields:

Name	Description
Name field	A unique name for the pool.
Description field	A description for the pool.
From field	The first WWPN address in the block.
Size field	The number of WWPN addresses in the block.
ID Range Qualification Policy drop-down list	Choose the ID Range Qualification Policy.

Step 9 Click **Submit**.

Adding a WWN Block

Step 1 On the menu bar, choose **Physical** > **Compute**.
Step 2 In the left pane, expand **Multi-Domain Managers**.
Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.
Step 4 In the right pane, click the **Organizations** tab.
Step 5 Click the organization in which you want to modify the pool and then click **View Details**.
Step 6 Click one of the following tabs:

- **WWNN Pools**
- **WWPN Pools**

- **WWXN Pools**

Step 7 Click the pool to which you want to add a WWN block.

Step 8 Click **Create WWN Block**.

Step 9 In the **Create WWN Block** dialog box, complete the following fields:

Name	Description
Description field	Type a description.
From field	The first WWNN, WWPN, or WWXN address in the block.
Size field	The number of WWNN, WWPN, or WWXN addresses in the block.
ID Range Qualification Policy drop-down list	Choose the ID Range Qualification Policy.

Step 10 Click **Submit**.

IQN Pools

An IQN pool is a collection of iSCSI Qualified Names (IQNs) for use as initiator identifiers by iSCSI vNICs in a Cisco UCS domain. IQN pools created in Cisco UCS Central can be shared between Cisco UCS domains. IQN pool members are of the form **prefix:suffix:number**, where you can specify the prefix, suffix, and a block (range) of numbers. An IQN pool can contain more than one IQN block, with different number ranges and different suffixes, but sharing the same prefix

Creating an IQN Pool

Step 1 On the menu bar, choose **Physical** > **Compute**.
Step 2 In the left pane, expand **Multi-Domain Managers**.
Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.
Step 4 In the right pane, click the **Organizations** tab.
Step 5 Click the organization in which you want to create the pool and then click **View Details**.
Step 6 Click the **IQN Pools** tab.
Step 7 Click **Add**.
Step 8 In the **IQN Pool** screen, enter a name, description, and prefix for the IQN pool.
Step 9 In the **IQNPool Block**, enter Suffix, From, Size, and ID Range Qualification Policy information.
Step 10 Click **Submit**.

vHBA Template

This template is a policy that defines how a vHBA (virtual Host Bus Adapter) on a server connects to the SAN. It is also referred to as a vHBA SAN connectivity template.

You need to include this policy in a service profile for it to take effect.

Creating a vHBA Template

Before You Begin

One or more of the following resources must already exist:

- Global VSAN
- WWPN pool
- SAN pin group

- Statistics threshold policy

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **Organizations** tab.

Step 5 Click the organization in which you want to create the policy and then click **View Details**.

Step 6 Click the **vHBA Templates** tab.

Step 7 Click **Add**.

Step 8 In the **Add vHBA Template** dialog box, enter a unique name and description for the policy.

Step 9 From the **Fabric ID** drop-down list, choose the fabric interconnect that you want to associate with vHBAs created from this template.

Step 10 From the **VSAN** drop-down list, choose the VSAN that you want to associate with vHBAs created from this template.

Step 11 From the **Template Type** drop-down list, choose one of the following:

- **Initial Template—**vHBAs created from this template are not updated if the template changes.
- **Updating Template—**vHBAs created from this template are updated if the template changes.

Step 12 In the **Max Data Field Size** field, enter the maximum size of the Fibre Channel frame payload bytes that the vHBA supports.
Enter an integer between 256 and 2112. The default is 2048.

Step 13 To associate policies with vNICs created from this template, complete the following fields:

Name	Description
Max Data Field Size field	The maximum size of the Fibre Channel frame payload bytes that the vHBA supports. Enter an integer between 256 and 2112. The default is 2048.
WWPN Pool drop-down list	Choose the WWPN pool that a vHBA created from this template uses to derive its WWPN address.
QoS Policy drop-down list	Choose the QoS policy that is associated with vHBAs created from this template.
Pin Group drop-down list	Choose the SAN pin group that is associated with vHBAs created from this template.
Stats Threshold Policy drop-down list	Choose the statistics threshold policy that is associated with vHBAs created from this template.

Step 14 Click **Submit**.

What to Do Next

Include the vHBA template in a vHBA policy.

Creating a vHBA Policy

Before You Begin

Make sure that at least one of the following exists in the Cisco UCS Central account and organization to which this policy applies:

- vHBA template
- Fibre Channel adapter policy

Step 1 On the menu bar, choose **Policies > Physical Infrastructure Policies > UCS Central**

Step 2 Click the **vHBA Policy** tab.

Step 3 Click **Add**.

Step 4 In the **Create UCS Central vHBA Policy** dialog box, do the following:

a) In the **vHBA Name** field, enter a unique name for the policy.
b) From the **Account Name** drop-down list, choose a Cisco UCS Central account to which this policy applies.
c) From the **Organization** drop-down list, choose the organization to which this policy applies.
d) From the **vHBA Template** drop-down list, choose a vHBA template.
e) From the **Adapter Policy** drop-down list, choose an adapter policy.
f) Click **Submit.**

What to Do Next

Include the vHBA policy in a storage policy.

SAN Connectivity Policy

SAN connectivity policies determine the connections and the network communication resources between the server and the LAN on the network. These policies use pools to assign WWNs and WWPNs to servers and to identify the vHBAs that the servers use to communicate with the network.

Note We do not recommend that you use static IDs in connectivity policies, because these policies are included in service profiles and service profile templates and can be used to configure multiple servers.

Creating a SAN Connectivity Policy

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **Organizations** tab.

Step 5 Click the organization in which you want to create the policy and then click **View Details**.

Step 6 Click the **SAN Connectivity Policies** tab.

Step 7 Click **Add**.

Step 8 In the **SAN Connectivity Policy** dialog box, enter a name and description for the policy.

Step 9 From the **WWNN Pool** drop-down list, choose the WWNN pool that you want to associate with this policy.

Step 10 In the **vHBAs** table, click **Add** and do the following:

a) Enter a name for the vHBA.

b) To use a vHBA template to create the vHBA, check the **Use vHBA Template** check box and choose the appropriate template from the drop-down list that is displayed.

c) To create a new vHBA without a template, do not check the **Use vHBA Template** check box and complete the fields that are displayed.
For more information about these fields, see Creating a vHBA Template, on page 41.

d) Click **Submit**.

Repeat this step if you want to add more vHBAs to the policy.

Step 11 After you have created all vHBAs required for the policy, click **Submit**.

Storage Policy

The storage policy is a Cisco UCS Director policy that configures the connections between a server and SAN storage, including the World Wide Node Name (WWNN) assigned to the server and the virtual host bus adapters (vHBAs) used by the server. Depending upon the configuration you choose, this policy can be used to configure two or more vHBAs for the server. You can choose to create the vHBAs in this policy or use a SAN connectivity policy to determine the vHBA configuration.

You must include this policy in a service profile and that service profile must be associated with a server for it to take effect.

Creating a Storage Policy

Step 1 On the menu bar, choose **Policies > Physical Infrastructure Policies > UCS Central**

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

Step 3 Click **Add**.

Step 4 In the **Create UCS Central Storage Policy** dialog box, enter a name and description for the policy.

Step 5 Complete the following fields to specify the Cisco UCS Central connections for the policy:

- **Account Name** drop-down list—Choose the Cisco UCS Central account to which you want to add this policy.
- **Organization** drop-down list—Choose the Cisco UCS Central organization to which you want to add this policy.

Step 6 From the **Local Disk Configuration Policy** drop-down list, choose the local disk configuration policy that you want to include in this storage policy.

Step 7 From the **SAN Connectivity Type** drop-down list, choose one of the following connectivity types:

Option	Description
Expert	Allows you to create up to 10 vHBAs that the server can use to access SAN storage. Continue with Step 8.
Simple	Allows you to create a maximum of two vHBAs that the server can use to access SAN storage. Continue with Step 9.
No vHBAs	Does not allow you to create any vHBAs. If you choose this option, any server associated with a service profile that includes this policy is not connected to SAN. Continue with Step 11.
Hardware Inherited	Uses the vHBAs assigned to the Fibre Channel adapter profile associated with the server. Continue with Step 11.
Use SAN Connectivity Policy	Uses a SAN connectivity policy to determine the SAN connectivity for the server. Continue with Step 10.

Step 8 If you chose the expert SAN storage option, do the following:

a) From the **WWNN Pool** drop-down list, choose the WWNN pool that you want to assign to this policy.
The WWNN pool must contain enough of WWNNs to assign a WWNN to each server that is associated with a service profile that uses this storage policy.

b) In the **Add vHBA** drop-down, choose the number of vHBAs (up to 10) that you want to add to the storage policy.

c) From the **Template For vHBA1.....vHBA10** list, choose a vHBA template for each vHBA.

d) Continue with Step 11.

Step 9 If you chose the simple SAN storage option, do the following:

a) From the **WWNN Pool** drop-down list, choose the WWNN pool that you want to assign to this policy.
The WWNN pool must contain enough of WWNNs to assign a WWNN to each server that is associated with a service profile that uses this storage policy.

b) In the **vHBA0 (Fabric A)** area, complete the following fields:

- In the **vHBA0 Name** field, enter a unique name for the vHBA.
- From the **Select VSAN** drop-down list, choose the name of the VSAN with which this vHBA is to be associated.

c) In the **vHBA1 (Fabric B)** area, complete the following fields:

- In the **vHBA1 Name** field, enter a unique name for the vHBA.
- From the **Select VSAN** drop-down list, choose the name of the VSAN with which this vHBA is to be associated.

d) Continue with Step 11.

Step 10 If you chose the SAN connectivity policy option, choose the policy that you want to associate with the server from the **SAN Connectivity Policy** drop-down list.

Step 11 Click **Submit**.

What to Do Next

Include the storage policy in a service profile.

ID Range Qualification Policy

ID range qualification policies allow you to create policies and assign them to qualified domain groups and domain IP addresses. The ID range qualification policy is then visible to those domain groups and domain IP addresses. You can also create ID range qualification policies without assigning qualified domain groups or IP addresses. If you do not set qualifiers, the policy is available to all domain groups. ID resolution occurs hierarchically in the organization structure in the same manner as other global policies.

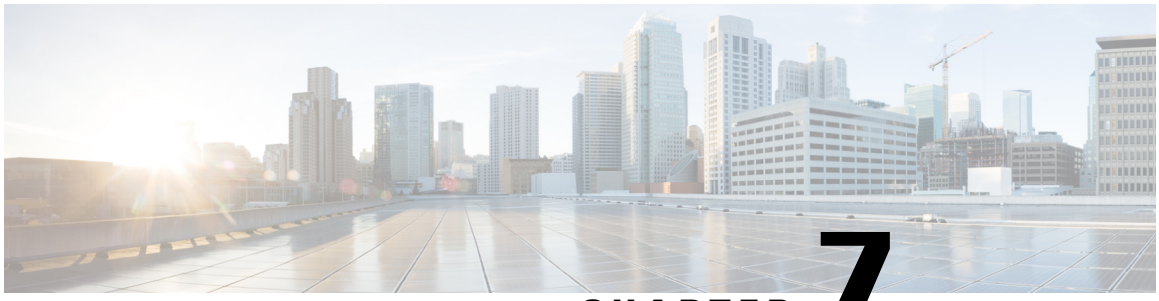
The ID Range Qualification Policy can be associated to:

- MAC Pool
- WWNN Pool
- WWPN Pool
- WWXN Pool
- IP Pools
- IQN Pools.

After you create an ID range qualification policy, you can apply it to a block in a new pool or an existing pool.

Creating an ID Range Qualification Policy

Step 1 On the menu bar, choose **Physical > Compute**.
Step 2 In the left pane, expand **Multi-Domain Managers**.
Step 3 In the left pane, expand **UCS Central Accounts** and then click the UCS Central account.
Step 4 In the right pane, click the **ID Range Qualification Policies** tab.
Step 5 Click **Add**.
Step 6 In the **Create ID Range Qualification Specification**, enter a name and description for the policy.
Step 7 In the **Domain Group** table, click the check box for the appropriate Domain Group or groups.
Step 8 Click **Submit**.



CHAPTER 7

Configuring Global Service Profiles

This chapter contains the following sections:

Global Service Profiles

Global service profiles centralize the logical configuration deployed across the data center. This centralization enables the maintenance of all service profiles in the registered Cisco UCS domains from one central location, Cisco UCS Central. When you use a global service profile, you can do the following across all Cisco UCS domains that are registered with the same Cisco UCS Central:

- Select a compute element for the service profile from any of the Cisco UCS domains.
- Migrate the service profile from one domain to another.
- Select servers from the available global server pools from any of the Cisco UCS domains.
- Associate global resources such as ID pools and policies.

For more information about global service profiles, including guidelines for implementing them, see the Cisco UCS Central configuration guides.

Global Service Profile Templates

Global service profile templates enable you to quickly create several service profiles with the same basic parameters, such as the number of vNICs and vHBAs, and with identity information drawn from the same pools. Service profile templates in Cisco UCS Central are similar to the service profile templates in Cisco UCS Manager.

Creating a Global Service Profile

Before You Begin

At a minimum, the following pools and policies that are required for service profiles must exist in the Cisco UCS Central account:

- UUID pool
- Storage policy
- PXE Network policy
- Blade Boot policy

Note You cannot create a host firmware package in Cisco UCS Director. If you want to incorporate this policy in a service profile, import it from the Cisco UCS Central account.

The other policies that you can include in a global service profile are optional. However, we recommend that you review the **Add Service Profile** dialog box. Ensure that you have created all of the policies that you want to include in the global service profile before you begin.

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 Click the **Global Service Profiles** tab.

Step 5 Click **Add**.

Step 6 In the **Add Service Profile** dialog box, enter a name and description for the service profile.

Step 7 From the following drop-down lists, choose the pools and policies that you want to include in this service profile:

- **Organization—**Required. Choose the organization to which the global service profile belongs.

  Note If the organization does not appear on the drop-down list, you can use the + button to add an addition organization to the drop-down.
- **UUID Assignment—**Required. Include this policy to specify the UUID for the server.
- **Storage Policy—**Required. Include this policy to specify the SAN connectivity for the server.
- **PXE Network Policy—**Required. Include this policy if you must have the server connected to the LAN.
- **PXE Boot Policy—**Optional. Include this policy if you want to have the server perform a PXE boot. The secondary boot in this policy must be from a local disk or a SAN boot. If you do not include this policy, the server uses the blade boot policy to determine the boot order.
- **Blade Boot Policy—**Required. Include this policy to determine the server boot.
- **BIOS Policy—**Optional. Include this policy if you want to change any of the default settings for the BIOS on the server.
- **IPMI Access Profile—**Optional. Include this policy if you want to be able to access the server through IPMI.

- **SOL Configuration Profile—**Optional. Include this policy if you want to be able to access the server through Serial over LAN.
- **Threshold Policy—**Optional. Include this policy to specify the thresholds for the server.
- **Scrub Policy—**Optional. Include this policy if you want to specify what happens to the local data and BIOS settings on a server during discovery and disassociation.
- **Host Firmware Policy—**Optional. Include this policy if you want to use a host firmware package to upgrade the server firmware.
- **Maintenance Policy—**Optional. Include this policy if you want to specify what happens when change that requires a server reboot is made to this service profile.
- **Power Control Policy—**Optional. Include this policy if the service profile is associated with a blade server and you want to specify the initial power allocation for the server.

Step 8 **Server Power State** drop-down list—Required. Choose one of the following to set the power state that is applied to the server when it is associated with this service profile:

- **Down—**If you want the server to be powered down before the profile is associated with the server.
- **Up—**If you want the server to be powered up before the profile is associated with the server.

Step 9 Click **Submit**.

Creating a Global Service Profile Template

Before You Begin

At a minimum, the following pools and policies that are required for service profile templates must exist in the Cisco UCS Central account:

- UUID pool
- Storage policy
- Network policy
- Boot policy

Note You cannot create a host firmware package in Cisco UCS Director. If you want to incorporate this policy in a service profile template, import it from the Cisco UCS Central account.

The other policies that you can include in a service profile template are optional. However, we recommend that you review the **Create Service Profile Template** dialog box. Ensure that you have created all of the policies that you want to include in the template before you begin.

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 Click the **Global Service Profile Templates** tab.

Step 5 Click **Add**.

Step 6 In the **Create Service Profile Template** dialog box, enter a name and description for the service profile template.

Step 7 From the **Organization** drop-down list, choose the organization to which the global service profile template belongs.

Step 8 From the **TemplateType** drop-down list, choose one of the following:

- **Initial Template—**Any service profiles created from this template are not updated if the template changes.
- **Updating Template—**Any service profiles created from this template are updated if the template changes.

Step 9 From the following drop-down lists, choose the pools and policies that you want to include in this service profile:

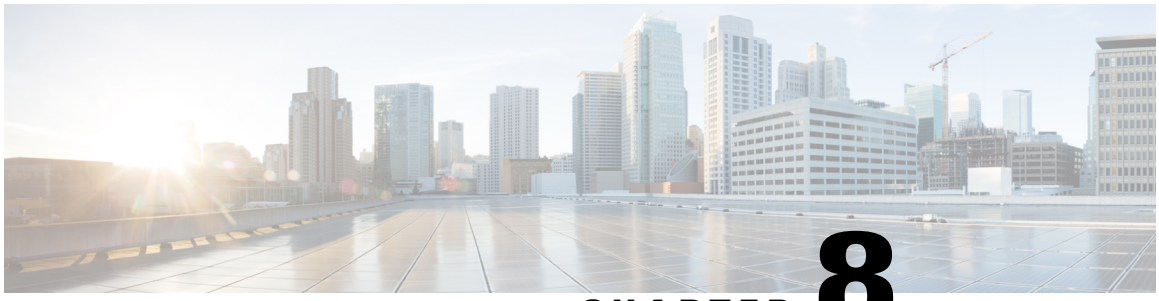
- **UUID Assignment—**Required. Include this policy to specify the UUID for the server.
- **Storage Policy—**Required. Include this policy to specify the SAN connectivity for the server.
- **PXE Network Policy—**Optional. Include this policy if you must have the server connected to the LAN.
- **PXE Boot Policy—**Optional. Include this policy if you want to have the server to perform a PXE boot. The secondary boot in this policy must be from a local disk or a SAN boot. If you do not include this policy, the server uses the blade boot policy to determine the boot order.
- **Blade Boot Policy—**Optional. Include this policy to determine the server boot order.
- **BIOS Policy—**Optional. Include this policy if you want to change any of the default settings for the BIOS on the server.
- **IPMI Access Profile—**Optional. Include this policy if you want to be able to access the server through IPMI.
- **SOL Configuration Profile—**Optional. Include this policy if you want to be able to access the server through Serial over LAN.
- **Management IP Address Policy—**Optional. Include this policy to specify the management IP address for the server.
- **Threshold Policy—**Optional. Include this policy to specify the thresholds for the server.
- **Scrub Policy—**Optional. Include this policy if you want to specify what happens to the local data and BIOS settings on a server during discovery and disassociation.
- **Host Firmware Policy—**Optional. Include this policy if you want to use a host firmware package to upgrade the server firmware.
- **Maintenance Policy—**Optional. Include this policy if you want to specify what happens when change that requires a server reboot is made to this service profile.

- **Power Control Policy—**Optional. Include this policy if the service profile is associated with a blade server and you want to specify the initial power allocation for the server.

Step 10 From the **Server Power State** drop-down list, choose one of the following to set the power state that is applied to the server when it is associated with this service profile:

- **Down—**If you want the server to be powered down before the profile is associated with the server.
- **Up—**If you want the server to be powered up before the profile is associated with the server.

Step 11 Click **Submit**.



CHAPTER 8

Configuring Cisco UCS Server Pools and Policies

This chapter contains the following sections:

UUID Pools

A UUID pool is a collection of SMBIOS (Systems Management Built In Operating System) UUIDs (Universally Unique Identifiers) that are available to be assigned to servers. The first number of digits that constitute the prefix of the UUID are fixed. The remaining digits, the UUID suffix, are variable. A UUID pool ensures that these variable values are unique for each server associated with a service profile which uses that particular pool to avoid conflicts.

If you use UUID pools in service profiles, you do not have to manually configure the UUID of the server associated with the service profile.

Creating a UUID Pool

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **Organizations** tab.

Step 5 Click the organization in which you want to create the pool and then click **View Details**.

Step 6 Click the **UUID Pools** tab.

Step 7 Click **Add**.

Step 8 In the **Add UUID Pool** dialog box, complete the following fields:

Name	Description
Name field	A unique name for the pool.
Description field	A description for the pool.
Prefix drop-down list	Choose how the prefix is created. This can be one of the following: • **Derived—**The system creates the prefix. • **Other—**You specify the desired prefix. If you select this option, a text field displays where you can enter the desired prefix, in the format XXXXXXXX-XXXX-XXXX.
From field	The first UUID address in the block.
Size field	The number of UUID addresses in the block.
ID Range Qualification Policy drop-down list	Choose the ID Range Qualification Policy.

Step 9 Click **Submit**.

Adding an Address Block to a UUID Pool

Step 1 On the menu bar, choose **Physical** > **Compute**.
Step 2 In the left pane, expand **Multi-Domain Managers**.
Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.
Step 4 In the right pane, click the **Organizations** tab.
Step 5 Click the organization in which you want to modify the pool and then click **View Details**.
Step 6 Click the **UUID Pools** tab.
Step 7 Click the pool to which you want to add a block of addresses and then click **Add UUID Addresses Block**.
Step 8 In the **Add UUID Pool Block** dialog box, complete the following fields:

Name	Description
From field	The first UUID address in the block.
Size field	The number of UUID addresses in the block.
ID Range Qualification Policy drop-down list	Choose the ID Range Qualification Policy

Step 9 Click **Submit**.

Server Pools

A server pool contains a set of servers. These servers typically share the same characteristics. Those characteristics can be their location in the chassis, or an attribute such as server type, amount of memory, local storage, type of CPU, or local drive configuration. You can manually assign a server to a server pool, or use server pool policies and server pool policy qualifications to automate the assignment.

If your system implements multitenancy through organizations, you can designate one or more server pools to be used by a specific organization. For example, a pool that includes all servers with two CPUs could be assigned to the Marketing organization, while all servers with 64 GB memory could be assigned to the Finance organization.

A server pool can include servers from any chassis in the system. A given server can belong to multiple server pools.

Creating a Server Pool

Step 1 On the menu bar, choose **Physical** > **Compute**.
Step 2 In the left pane, expand **Multi-Domain Managers**.
Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.
Step 4 In the right pane, click the **Organizations** tab.
Step 5 Click the organization in which you want to create the pool and then click **View Details**.
Step 6 Click the **Server Pools** tab.
Step 7 Click **Add**.
Step 8 In the **Add Server Pool** dialog box, add a name and description for the pool.
Step 9 (Optional) In the **Servers** field, do the following to add servers to the pool:
a) Click **Select**.
b) On the **Select Items** page, check the check boxes for the servers that you want to add to the pool.
c) Click **Select**.
Step 10 Click **Add**.

Server Pool Qualification Policy

The Server Pool Qualification policy qualifies servers based on the servers available in the system. You can use this policy to qualify servers according to

- Server-related criteria such as model or type, product family, or chassis location
- Domain-related criteria such as domain group or domain name
- Processor-related criteria such as CPU cores, type, and configuration
- Storage configuration and capacity
- Memory type and configuration
- Other criteria such as adapter type, owner, site, or IP address

Based on the criteria added in the Server Pool Qualification policy, the servers qualified can then be used in the create server pool operation.

Creating a Server Pool Qualification Policy

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the **Cisco UCS Central** account.

Step 4 In the right pane, click the **Organizations** tab.

Step 5 Click the organization in which you want to create the policy and then click **View Details**.

Step 6 Click the **Server Pool Qualification Policy** tab.

Step 7 Click **Add**.
The **Create Server Pool Qualification Policy** dialog box appears.

Step 8 In the **Create Server Pool Qualification Policy Name** screen, type a name for the policy, an optional description, and an optional Server Model/PID. Click **Next**.

Step 9 In the **Domain** screen, click the plus (+) sign to optionally add the domain qualifier.
The **Add Entry to Domain Qualifier** screen appears. You can qualify servers based on the following criteria:

- Owner - The owner of the servers.
- Site - The site that the servers belong to.
- IP Address Range - The IP address range of the servers.
- Blade Servers - The chassis IDs and slot IDs of the servers.
- Rack Servers - The rack IDs of the servers.
- Domain Group - The domain groups that the servers belong to.
- Domain Name - The domains that the servers belong to.

- Product Family - The product family of the servers.

Step 10 In the **Add Entry to Domain Qualifier** screen, type a name for the qualifier in the **Name** box. Check the criteria you want to add. Then click the plus (+) sign to add the criteria. After adding the domain qualification option, click **Next**.

Step 11 In the **Hardware - Processors** screen, check the **Processor** box to optionally add processor-related criteria. Then click **Next**.

Step 12 In the **Hardware - Memory** screen, check the **Memory** box to optionally add memory-related criteria. Then click **Next**.

Step 13 In the **Hardware - Storage** screen, check the **Storage** box to optionally add storage-related criteria. Then click **Next**.

Step 14 In the **Hardware - Adapter** screen, check the **Adapter** box to optionally add the adapter type, number of adapters, and Model/PID.

Step 15 After adding all the criteria, click **Submit**.

Editing or Deleting a Server Pool Qualification Policy

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the **Cisco UCS Central** account.

Step 4 In the right pane, click the **Organizations** tab.

Step 5 Click the organization in which you want to modify or delete a server qualification policy and then click **View Details**.

Step 6 Click the **Server Pool Qualification Policy** tab.

Step 7 To delete a server pool qualification policy, choose the policy and click **Delete**. A confirmation message appears. Click **Delete** again.

Step 8 To modify an existing server pool qualification policy, choose the policy and click **Edit**.
The **Edit Server Pool Qualification Policy** dialog box appears. It contains the following screens:

- Create Server Pool Policy Qualification Name
- Domain
- Hardware - Processors
- Hardware - Memory
- Hardware - Storage
- Hardware - Adapter

Step 9 After modifying existing qualification options or adding new options, click **Submit**.

Boot Policy

Important Cisco UCS Manager Release 3.1(2) and later releases do not support Cisco UCS M-Series Servers.

The Cisco UCS Manager enables you to create a boot policy for blade servers, rack servers, and modular servers.

The Cisco UCS Manager boot policy overrides the boot order in the BIOS setup menu and determines the following:

- Selection of the boot device
- Location from which the server boots
- Order in which boot devices are invoked

For example, you can have associated servers boot from a local device, such as a local disk or CD-ROM (VMedia), or you can select a SAN boot or a LAN (PXE) boot.

You can either create a named boot policy to associate with one or more service profiles, or create a boot policy for a specific service profile. A boot policy must be included in a service profile, and that service profile must be associated with a server for it to take effect. If you do not include a boot policy in a service profile, Cisco UCS Manager applies the default boot policy.

Note Changes to a boot policy might be propagated to all servers created with an updating service profile template that includes that boot policy. Re-association of the service profile with the server to rewrite the boot order information in the BIOS is automatically triggered.

You can also specify the following for the boot policy:

- Local LUN name. The name specified is the logical name in the storage profile, not the deployed name. For modular servers, you can specify both a primary and secondary name. For other servers, specify only a primary name. Specifying a secondary name results in a configuration error.
- Specific JBOD disk number for booting from JBOD disks. This is not supported for the Modular servers.
- Any LUN for backward compatibility; however, we do not recommend this. Other devices must not have bootable images to ensure a successful boot.

SAN Boot

You can configure a boot policy to boot one or more servers from an operating system image on the SAN. The boot policy can include a primary and a secondary SAN boot. If the primary boot fails, the server attempts to boot from the secondary.

Cisco recommends using a SAN boot, because it offers the most service profile mobility within the system. If you boot from the SAN when you move a service profile from one server to another, the new server boots from the same operating system image. Therefore, the new server appears as the same server to the network.

To use a SAN boot, ensure that the following is configured:

- The Cisco UCS domain must be able to communicate with the SAN storage device that hosts the operating system image.
- A boot target LUN (Logical Unit Number) on the device where the operating system image is located.

Note SAN boot is not supported on Gen-3 Emulex adapters on Cisco UCS blade and rack servers.

Creating a SAN Boot Policy

Tip We recommend that the boot order in a boot policy include either a local disk or a SAN LUN, but not both, to avoid the possibility of the server booting from the wrong storage type. If you configure a local disk and a SAN LUN for the boot order storage type and the operating system or logical volume manager (LVM) is configured incorrectly, the server boots from the local disk rather than the SAN LUN.

For example, on a server with Red Hat Linux installed, where the LVM is configured with default LV names and the boot order is configured with a SAN LUN and a local disk, Linux reports that there are two LVs with the same name and boots from the LV with the lowest SCSI ID, which could be the local disk.

Before You Begin

Note If you are creating a boot policy that boots the server from a SAN LUN and you require reliable SAN boot operations, we recommend that you first remove all local disks from servers associated with a service profile that includes the boot policy.

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **Organizations** tab.

Step 5 Click the organization in which you want to create the policy and then click **View Details**.

Step 6 Click the **Boot Policies** tab.

Step 7 Click **Add**.

Step 8 In the **Add Boot Policy** dialog box, complete the following fields:

Name	Description
Name field	A unique name for the policy.
Description field	A description for the policy.

Name	Description
Reboot on Order Change check box	If checked, reboots all servers that use this boot policy after you change the boot order. If this check box is checked and if CD-ROM or Floppy is the last device in the boot order, deleting or adding the device does not directly affect the boot order and the server does not reboot.
Enforce vNIC/vHBA Name check box	If checked, a configuration error is displayed if one or more of the vNICs, vHBAs, or iSCSI vNICs listed in the Boot Order table matches the server configuration in the service profile. If this check box is not checked, the policy uses the vNICs, vHBAs, or iSCSI vNICs (as appropriate for the boot option) from the server configuration in the service profile. It does not report whether the vNICs, vHBAs, or iSCSI vNICs specified in the boot policy match the server configuration in the service profile.

Step 9 In the **Add Boot Device** area, check **Add SAN Boot**.

Step 10 In the **Primary vHBA** field, enter the name of the vHBA that you want to use as the first address defined for the SAN boot location.

Step 11 In the **Secondary vHBA** field, enter the name of the vHBA that you want to use as the second address defined for the SAN boot location.

Step 12 (Optional) If either or both of the primary and secondary vHBAs points to a bootable SAN image, check the appropriate **Add SAN Boot Target** check box for that vHBA and complete the following fields:

Name	Description
Storage Account Type drop-down list	Choose the type of storage account where the bootable SAN image is located. This field is only available for the primary vHBA.
Storage Account Name drop-down list	Choose the storage account where the bootable SAN image is located.
Primary Boot Target LUN field	The LUN that corresponds to the location of the boot image.
Primary Boot Target WWPN field	Click **Select** and choose the WWPN that corresponds to the location of the boot image.
Secondary Boot Target LUN field	The LUN that corresponds to the location of the boot image.
Secondary Boot Target WWPN field	Click **Select** and choose the WWPN that corresponds to the location of the boot image.

Step 13 Click **Submit**.

LAN Boot

You can configure a boot policy to boot one or more servers from a centralized provisioning server on the LAN. A LAN (or PXE) boot is frequently used to install operating systems on a server from that LAN server.

You can add more than one type of boot device to a LAN boot policy. For example, you could add a local disk or virtual media boot as a secondary boot device.

Creating a LAN Boot Policy

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **Organizations** tab.

Step 5 Click the organization in which you want to create the policy and then click **View Details**.

Step 6 Click the **Boot Policies** tab.

Step 7 Click **Add**.

Step 8 In the **Add Boot Policy** dialog box, complete the following fields:

Name	Description
Name field	A unique name for the policy.
Description field	A description for the policy.
Reboot on Order Change check box	If checked, reboots all servers that use this boot policy after you change the boot order. If this check box is checked and if CD-ROM or Floppy is the last device in the boot order, deleting or adding the device does not directly affect the boot order and the server does not reboot.

Name	Description
Enforce vNIC/vHBA Name check box	If checked, a configuration error is displayed if one or more of the vNICs, vHBAs, or iSCSI vNICs listed in the Boot Order table matches the server configuration in the service profile. If this check box is not checked, the policy uses the vNICs, vHBAs, or iSCSI vNICs (as appropriate for the boot option) from the server configuration in the service profile. It does not report whether the vNICs, vHBAs, or iSCSI vNICs specified in the boot policy match the server configuration in the service profile.

Step 9 In the **Add Boot Device** area, check the **Add LAN Boot** check box.

Step 10 In the **Primary vNIC** field, enter the name of the vNIC that you want to use as the first address defined for the LAN boot location.

Step 11 In the **Secondary vNIC** field, enter the name of the vNIC that you want to use as the second address defined for the LAN boot location.

Step 12 Click **Submit**.

Local Disk Boot

If a server has a local drive, you can configure a boot policy to boot the server from that device or from any of the following local devices:

- Local hard disk drive
- SD card
- Internal USB
- External USB

Creating a Local Disk Boot Policy

You can add more than one type of boot device to a boot policy. For example, you could add a local disk boot as a secondary boot device.

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **Organizations** tab.

Step 5 Click the organization in which you want to create the policy and then click **View Details**.

Step 6 Click the **Boot Policies** tab.

Step 7 Click **Add**.

Step 8 In the **Add Boot Policy** dialog box, complete the following fields:

Name	Description
Name field	A unique name for the policy.
Description field	A description for the policy.
Reboot on Order Change check box	If checked, reboots all servers that use this boot policy after you change the boot order. If this check box is checked and if CD-ROM or Floppy is the last device in the boot order, deleting or adding the device does not directly affect the boot order and the server does not reboot.
Enforce vNIC/vHBA Name check box	If checked, a configuration error is displayed if one or more of the vNICs, vHBAs, or iSCSI vNICs listed in the Boot Order table matches the server configuration in the service profile. If this check box is not checked, the policy uses the vNICs, vHBAs, or iSCSI vNICs (as appropriate for the boot option) from the server configuration in the service profile. It does not report whether the vNICs, vHBAs, or iSCSI vNICs specified in the boot policy match the server configuration in the service profile.

Step 9 In the **Add Boot Device** area, check the **Add Local Disk** check box.

Step 10 Click **Submit**.

Virtual Media Boot

You can configure a boot policy to boot one or more servers from a virtual media device that is accessible from the server. A virtual media device mimics the insertion of a physical CD/DVD disk (read-only) or floppy disk (read-write) into a server. This type of server boot is typically used to manually install operating systems on a server.

Creating a Virtual Media Boot Policy

You can add more than one type of boot device to a boot policy. For example, you could add a local disk boot as a secondary boot device.

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **Organizations** tab.

Step 5 Click the organization in which you want to create the policy and then click **View Details**.

Step 6 Click the **Boot Policies** tab.

Step 7 Click **Add**.

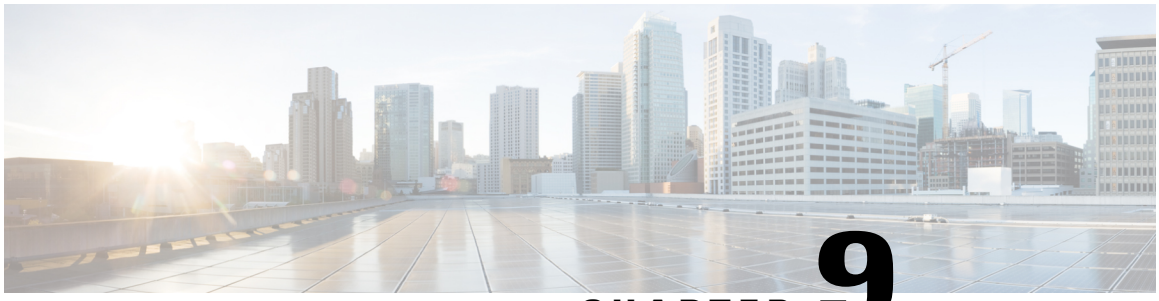
Step 8 In the **Add Boot Policy** dialog box, complete the following fields:

Name	Description
Name field	A unique name for the policy.
Description field	A description for the policy.
Reboot on Order Change check box	If checked, reboots all servers that use this boot policy after you change the boot order. If this check box is checked and if CD-ROM or Floppy is the last device in the boot order, deleting or adding the device does not directly affect the boot order and the server does not reboot.
Enforce vNIC/vHBA Name check box	If checked, a configuration error is displayed if one or more of the vNICs, vHBAs, or iSCSI vNICs listed in the Boot Order table matches the server configuration in the service profile. If this check box is not checked, the policy uses the vNICs, vHBAs, or iSCSI vNICs (as appropriate for the boot option) from the server configuration in the service profile. It does not report whether the vNICs, vHBAs, or iSCSI vNICs specified in the boot policy match the server configuration in the service profile.

Step 9 In the **Add Boot Device** area, check one or both of the following check boxes:

- **Add CD ROM**
- **Add Floppy Disk**

Step 10 Click **Submit**.



CHAPTER 9

Monitoring and Reporting

This chapter contains the following sections:

About Monitoring and Reporting

Cisco UCS Director displays all managed Cisco UCS components in each Cisco UCS domain registered with a Cisco UCS Central account. These components can be hardware or software.

Information You Can View

You can view and monitor details about each component, including the following:

- License status
- Summary of the status

Components You Can Monitor

You can monitor each registered Cisco UCS domain and the Cisco UCS Manager inventory for that Cisco UCS domain, including the following:

- Fabric interconnects
- Chassis
- Servers

- FEXes

Viewing the Hardware Inventory for a Cisco UCS Domain

You can view all hardware in a Cisco UCS domain, including the model, serial number, status, and availability.

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **All UCS Domains** tab.

Step 5 Click the row for the Cisco UCS domain for which you want to view the hardware inventory.

Step 6 Click **View Details**.
Cisco UCS Director displays a set of tabs with information about the fabric interconnects, chassis, servers, and FEXes in the Cisco UCS domain.

Viewing the Cisco UCS Fabric Interconnect Inventory Report

This report shows you the number of Cisco UCS fabric interconnects in a Cisco UCS Central account and how many of them are operable.

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **UCS Fabric Interconnect Inventory** tab.
Click the drop-down menu button at the right side of the tab menu to view this tab.

Viewing the Cisco UCS Chassis Inventory Report

This report shows you the number of Cisco UCS chassis in a Cisco UCS Central account and how many of them are powered on.

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **UCS Chassis Inventory** tab.
Click the drop-down menu button at the right side of the tab menu to view this tab.

Viewing the Cisco UCS Servers Inventory Report

This report shows you the number of Cisco UCS servers in a Cisco UCS Central account and how many of those servers are operable.

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **UCS Server Inventory** tab.
Click the drop-down menu button at the right side of the tab menu to view this tab.

Viewing the Cisco UCS Server Association Report

This report shows you the number of associated, unassociated, and other Cisco UCS servers in a Cisco UCS Central account.

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **UCS Servers Associated vs Unassociated** tab.
Click the drop-down menu button at the right side of the tab menu to view this tab.

BM Testing with the UCS Central Tasks

This report covers the ID usage utilization inventory and the tabular representation related to each domain associated to a Cisco UCS Central

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

Step 2 In the left pane, expand **Multi-Domain Managers**.

Step 3 In the left pane, expand **UCS Central Accounts** and then click the Cisco UCS Central account.

Step 4 In the right pane, click the **All UCS Domains** tab.

Step 5 In the right pane, double-click a UCS domain.

Step 6 In the right pane, click the **IDUsage** tab.
For each UCS Domain associated to a Cisco UCS Central account, the ID usage related to **fc, mac, uuid, and iqn** pools is collected as part of a central inventory collection task.

Step 7 To drill down the report, double-click a domain name (DN).
Total ID Usage/Available ID Usage/Assigned ID Usage/Conflict ID Usage are available on separate tabs.