



Configuring Server-Related Policies

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Configuring BIOS Settings

Server BIOS Settings

Cisco UCS provides two methods for making global modifications to the BIOS settings on servers in an instance. You can create one or more BIOS policies that include a specific grouping of BIOS settings that match the needs of a server or set of servers, or you can use the default BIOS settings for a specific server platform.

Both the BIOS policy and the default BIOS settings for a server platform enable you to fine tune the BIOS settings for options such as the following:

Main Server Settings

- Quiet boot

- Resume on AC power loss
- Front panel lockout

Processor Settings

- Intel TurboBoost Technology
- Enhanced Intel SpeedStep
- Intel Hyperthreading Technology
- Intel Virtualization Technology
- Processor C3 report
- Processor C6 report

Intel-Directed I/O

- Intel VT for directed I/O
- Interrupt remap
- Coherency support
- ATS Support
- Pass Through DMA

RAS Memory

- Memory RAS configuration
- NUMA Optimized
- Mirroring mode
- LV DDR mode

Depending upon the needs of the data center, you can combine both of these options in a Cisco UCS instance, or you can use only one of them. You can also use Cisco UCS Manager to view the actual BIOS settings on a server and determine whether they are meeting current needs.



Note

Cisco UCS Manager pushes BIOS configuration changes through a BIOS policy or default BIOS settings to the CIMC buffer. These changes remain in the buffer until the server is rebooted.

If you change a BIOS policy, you must reboot any servers associated with service profiles that include the policy for the changes to take effect.

If you change the default BIOS settings, those changes are applied to servers upon association with service profiles that do not include a BIOS policy or when the server is rebooted. Changes to the default BIOS settings do not affect servers that are already associated with service profiles.

BIOS Policy

The BIOS policy is a policy that automates the configuration of BIOS settings for a server or group of servers. You can create global BIOS policies available to all servers in the root organization, or you can create BIOS policies in sub-organizations that are only available to that hierarchy.

To use a BIOS policy, do the following:

- Create the BIOS policy in Cisco UCS Manager
- Assign the BIOS policy to one or more service profiles
- Associate the service profile with a server

During service profile association, Cisco UCS Manager modifies the BIOS settings on the server to match the configuration in the BIOS policy. If you do not create and assign a BIOS policy to a service profile, the server uses the default BIOS settings for that server platform.

Default BIOS Settings

Default BIOS settings are applicable to all servers of a specific type that do not have a BIOS policy included in their service profiles. These settings are available only in the root organization and are global. Only one set of BIOS settings can exist for each server platform supported by Cisco UCS.

Cisco UCS Manager applies these server platform-specific BIOS settings as follows:

- The service profile associated with a server does not include a BIOS policy
- The BIOS policy is configured with the platform-default option for a specific setting

You can modify the default BIOS settings provided by Cisco UCS Manager. However, any changes to the default BIOS settings apply to all servers of that particular type or platform. If you want to modify the BIOS settings for only certain servers, we recommend that you use a BIOS policy.

Creating a BIOS Policy

If you change a BIOS policy, you must reboot any servers associated with service profiles that include the policy for the changes to take effect.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters org mode for the specified organization. To enter the default org mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # create bios-policy <i>policy-name</i>	Creates a BIOS policy with the specified policy name, and enters org BIOS policy mode.
Step 3	UCS-A /org/bios-policy # set quiet-boot-config quiet-boot {disabled enabled platform-default}	(Optional) Determines what the BIOS displays during Power On Self-Test (POST). This can be one of the following: <ul style="list-style-type: none"> • disabled—The BIOS displays the logo screen.

	Command or Action	Purpose
		<ul style="list-style-type: none"> • enabled—The BIOS does not display any messages during boot. • platform-default—The BIOS uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 4	UCS-A /org/bios-policy # set resume-ac-on-power-loss-config resume-action {stay-off last-state reset platform-default}	<p>(Optional) Determines how the server behaves when power is restored after an unexpected power loss. This can be one of the following:</p> <ul style="list-style-type: none"> • stay-off—The server remains off until manually powered on. • last-state—The server is powered on and the system attempts to restore its last state. • reset—The server is powered on and automatically reset. • platform-default—The server uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 5	UCS-A /org/bios-policy # set front-panel-lockout-config front-panel-lockout {disabled enabled platform-default}	<p>(Optional) Specifies whether the power and reset buttons on the front panel are ignored by the server. This can be one of the following:</p> <ul style="list-style-type: none"> • disabled—The power and reset buttons on the front panel are active and can be used to affect the server. • enabled—The power and reset buttons are locked out. The server can only be reset or powered on or off from the CIMC GUI. • platform-default—The server uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 6	UCS-A /org/bios-policy # set intel-turbo-boost-config turbo-boost {disabled enabled platform-default}	<p>(Optional) Specifies whether the processor uses Intel Turbo Boost Technology, which allows the processor to automatically increase its frequency if it is running below power, temperature, or voltage specifications. This can be one of the following:</p> <ul style="list-style-type: none"> • disabled—The processor never increases its frequency automatically. • enabled—The processor utilizes Turbo Boost Technology if required. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.

	Command or Action	Purpose
Step 7	UCS-A /org/bios-policy # set enhanced-intel-speedstep-config speed-step {disabled enabled platform-default}	<p>(Optional) Specifies whether the processor uses Enhanced Intel SpeedStep Technology that allows the system to dynamically adjust processor voltage and core frequency, which can result in decreased average power consumption and decreased average heat production. This can be one of the following:</p> <ul style="list-style-type: none"> • disabled—The processor never dynamically adjusts its voltage or frequency. • enabled—The processor utilizes Enhanced Intel SpeedStep Technology and enables all supported processor sleep states to further conserve power. Contact your operating system vendor to make sure the operating system supports this feature. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 8	UCS-A /org/bios-policy # set hyper-threading-config hyper-threading {disabled enabled platform-default}	<p>(Optional) Specifies whether the processor uses Intel Hyper-Threading Technology, which allows multithreaded software applications to execute threads in parallel within each processor. This can be one of the following:</p> <ul style="list-style-type: none"> • disabled—The processor does not permit hyperthreading. • enabled—The processor allows for the parallel execution of multiple threads. Contact your operating system vendor to make sure the operating system supports this feature. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 9	UCS-A /org/bios-policy # set intel-vt-config vt {disabled enabled platform-default}	<p>(Optional) Specifies whether the processor uses Intel Virtualization Technology, which allows a platform to run multiple operating systems and applications in independent partitions. This can be one of the following:</p> <ul style="list-style-type: none"> • disabled—The processor does not permit virtualization. • enabled—The processor allows multiple operating systems in independent partitions. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor. <p>Note If you change this option, you must power cycle the server before the setting takes effect.</p>

	Command or Action	Purpose
Step 10	UCS-A /org/bios-policy # set processor-c3-report-config processor-c3-report {acpi-c2 acpi-c2 disabled platform-default}	<p>(Optional) Determines whether the processor sends the C3 report to the operating system. This can be one of the following:</p> <ul style="list-style-type: none"> • acpi-c2—The processor sends the C3 report using the ACPI C2 format. • acpi-c3—The processor sends the C3 report using the ACPI C3 format. • disabled—The processor does not send the C3 report. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 11	UCS-A /org/bios-policy # set processor-c6-report-config processor-report {disabled enabled platform-default}	<p>(Optional) Determines whether the processor sends the C6 report to the operating system. This can be one of the following:</p> <ul style="list-style-type: none"> • disabled—The processor does not send the C6 report. • enabled—The processor sends the C6 report. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 12	UCS-A /org/bios-policy # set intel-vt-directed-io-config vtd {disabled enabled platform-default}	<p>(Optional) Specifies whether the processor uses Intel Virtualization Technology for Directed I/O. This can be one of the following:</p> <ul style="list-style-type: none"> • disabled—The processor does not use virtualization technology. • enabled—The processor uses virtualization technology. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 13	UCS-A /org/bios-policy # set intel-vt-directed-io-config interrupt-remapping {disabled enabled platform-default}	<p>(Optional) Specifies whether the processor supports Intel VT-d Interrupt Remapping. This can be one of the following:</p> <ul style="list-style-type: none"> • disabled—The processor does not support remapping. • enabled—The processor uses VT-d Interrupt Remapping as required. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 14	UCS-A /org/bios-policy # set intel-vt-directed-io-config	<p>(Optional) Specifies whether the processor supports Intel VT-d Coherency. This can be one of the following:</p>

	Command or Action	Purpose
	coherency-support {disabled enabled platform-default}	<ul style="list-style-type: none"> • disabled—The processor does not support coherency. • enabled—The processor uses VT-d Coherency as required. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 15	UCS-A /org/bios-policy # set intel-vt-directed-io-config ats-support {disabled enabled platform-default}	<p>(Optional) Specifies whether the processor supports Intel VT-d Address Translation Services (ATS). This can be one of the following:</p> <ul style="list-style-type: none"> • disabled—The processor does not support ATS. • enabled—The processor uses VT-d ATS as required. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 16	UCS-A /org/bios-policy # set intel-vt-directed-io-config passthrough-dma {disabled enabled platform-default}	<p>(Optional) Specifies whether the processor supports Intel VT-d Pass-through DMA. This can be one of the following:</p> <ul style="list-style-type: none"> • disabled—The processor does not support pass-through DMA. • enabled—The processor uses VT-d Pass-through DMA as required. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 17	UCS-A /org/bios-policy # set memory-ras-config ras-config {lockstep maximum performance mirroring platform-default}	<p>(Optional) Specifies the memory reliability, availability and serviceability (RAS) configuration. This can be one of the following:</p> <ul style="list-style-type: none"> • lockstep—If the DIMM pairs in the server have an identical type, size, and organization and are populated across the SMI channels, you can enable lockstep mode to minimize memory access latency and provide better performance. Lockstep is enabled by default for B400 servers. • maximum performance—System performance is optimized. • mirroring—System reliability is optimized by using half the system memory as backup. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.

	Command or Action	Purpose
Step 18	UCS-A /org/bios-policy # set numa-config numa-optimization {disabled enabled platform-default}	<p>(Optional) Specifies whether the BIOS supports NUMA. This can be one of the following:</p> <ul style="list-style-type: none"> • disabled—The BIOS does not support NUMA. • enabled—The BIOS includes the ACPI tables that are required for NUMA-aware operating systems. If you enable this option, the system must disable Inter-Socket Memory interleaving on some platforms. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 19	UCS-A /org/bios-policy # set memory-mirroring-mode mirroring-mode {intersocket intrasocket platform-default}	<p>(Optional) Specifies memory mirroring, which enhances system reliability by keeping two identical data images in memory. This can be one of the following:</p> <ul style="list-style-type: none"> • intersocket—Memory is mirrored between two Integrated Memory Controllers (IMCs) across CPU sockets. • intrasocket—One IMC is mirrored with another IMC in the same socket. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 20	UCS-A /org/bios-policy # set lv-dimm-support-config lv-ddr-mode {performance-mode power-saving-mode platform-default}	<p>(Optional) Specifies whether the system prioritizes low voltage or high frequency memory operations. This can be one of the following:</p> <ul style="list-style-type: none"> • performance-mode—The system prioritizes high frequency operations over low voltage operations. • power-saving-mode—The system prioritizes low voltage memory operations over high frequency memory operations. This mode may lower memory frequency in order to keep the voltage low. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 21	UCS-A /org/bios-policy # set console-redir-config console-redir {disabled platform-default serial-port-a serial-port-b}	<p>(Optional) Specifies whether a serial port can be used for server management tasks. This can be one of the following:</p> <ul style="list-style-type: none"> • disabled—Serial ports cannot be used for management tasks. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.

	Command or Action	Purpose
		<ul style="list-style-type: none"> • serial-port-a—Serial port A is configured for management tasks. • serial-port-b—Serial port B is configured for management tasks.
Step 22	UCS-A /org/bios-policy # set console-redir-config baud-rate {115200 57600 38400 19200 9600}	(Optional) If a serial port can be used for management tasks, set the serial port transmission speed so that it matches the rate of the remote terminal application. This can be one of the following: <ul style="list-style-type: none"> • 115200 • 57600 • 38400 • 19200 • 9600 • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 23	UCS-A /org/bios-policy # commit-buffer	Commits the transaction to the system configuration.

The following example creates a BIOS policy under the root organization and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # create bios-policy biosPolicy3
UCS-A /org/bios-policy* # set numa-config numa-optimization enabled
UCS-A /org/bios-policy* # commit-buffer
UCS-A /org/bios-policy #
```

Modifying BIOS Defaults

If you change the default BIOS settings, those changes are applied to servers upon association with service profiles that do not include a BIOS policy or when the server is rebooted. Changes to the default BIOS settings do not affect servers that are already associated with service profiles.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope system	Enters system mode.
Step 2	UCS-A /system # scope server-defaults	Enters server defaults mode.
Step 3	UCS-A /system/server-defaults # show platform	(Optional) Displays platform descriptions for all servers.

	Command or Action	Purpose
Step 4	UCS-A /system/server-defaults # scope platform <i>platform-description</i>	Enters server defaults mode for the server specified. For the <i>platform-description</i> argument, enter the entire server description as displayed by the show platform command.
Step 5	UCS-A /system/server-defaults/platform # scope bios-settings	Enters server defaults BIOS settings mode for the server.
Step 6	UCS-A /system/server-defaults/platform/bios-settings # set quiet-boot-config quiet-boot { disabled enabled platform-default }	(Optional) Determines what the BIOS displays during Power On Self-Test (POST). This can be one of the following: <ul style="list-style-type: none"> • disabled—The BIOS displays the logo screen. • enabled—The BIOS does not display any messages during boot. • platform-default—The BIOS uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 7	UCS-A /system/server-defaults/platform/bios-settings # set resume-ac-on-power-loss-config resume-action { stay-off last-state reset platform-default }	(Optional) Determines how the server behaves when power is restored after an unexpected power loss. This can be one of the following: <ul style="list-style-type: none"> • stay-off—The server remains off until manually powered on. • last-state—The server is powered on and the system attempts to restore its last state. • reset—The server is powered on and automatically reset. • platform-default—The server uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 8	UCS-A /system/server-defaults/platform/bios-settings # set front-panel-lockout-config front-panel-lockout { disabled enabled platform-default }	(Optional) Specifies whether the power and reset buttons on the front panel are ignored by the server. This can be one of the following: <ul style="list-style-type: none"> • disabled—The power and reset buttons on the front panel are active and can be used to affect the server. • enabled—The power and reset buttons are locked out. The server can only be reset or powered on or off from the CIMC GUI. • platform-default—The server uses the value for this attribute contained in the BIOS defaults for the server type and vendor.

	Command or Action	Purpose
Step 9	UCS-A /system/server-defaults/platform/bios-settings # set intel-turbo-boost-config turbo-boost {disabled enabled platform-default}	(Optional) Specifies whether the processor uses Intel Turbo Boost Technology, which allows the processor to automatically increase its frequency if it is running below power, temperature, or voltage specifications. This can be one of the following: <ul style="list-style-type: none"> • disabled—The processor never increases its frequency automatically. • enabled—The processor utilizes Turbo Boost Technology if required. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 10	UCS-A /system/server-defaults/platform/bios-settings # set enhanced-intel-speedstep-config speed-step {disabled enabled platform-default}	(Optional) Specifies whether the processor uses Enhanced Intel SpeedStep Technology that allows the system to dynamically adjust processor voltage and core frequency, which can result in decreased average power consumption and decreased average heat production. This can be one of the following: <ul style="list-style-type: none"> • disabled—The processor never dynamically adjusts its voltage or frequency. • enabled—The processor utilizes Enhanced Intel SpeedStep Technology and enables all supported processor sleep states to further conserve power. Contact your operating system vendor to make sure the operating system supports this feature. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 11	UCS-A /system/server-defaults/platform/bios-settings # set hyper-threading-config hyper-threading {disabled enabled platform-default}	(Optional) Specifies whether the processor uses Intel Hyper-Threading Technology, which allows multithreaded software applications to execute threads in parallel within each processor. This can be one of the following: <ul style="list-style-type: none"> • disabled—The processor does not permit hyperthreading. • enabled—The processor allows for the parallel execution of multiple threads. Contact your operating system vendor to make sure the operating system supports this feature.

	Command or Action	Purpose
		<ul style="list-style-type: none"> • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 12	UCS-A /system/server-defaults/platform/bios-settings # set intel-vt-config vt {disabled enabled platform-default}	<p>(Optional) Specifies whether the processor uses Intel Virtualization Technology, which allows a platform to run multiple operating systems and applications in independent partitions. This can be one of the following:</p> <ul style="list-style-type: none"> • disabled—The processor does not permit virtualization. • enabled—The processor allows multiple operating systems in independent partitions. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor. <p>Note If you change this option, you must power cycle the server before the setting takes effect.</p>
Step 13	UCS-A /system/server-defaults/platform/bios-settings # set processor-c3-report-config processor-c3-report {acpi-c2 acpi-c2 disabled platform-default}	<p>(Optional) Determines whether the processor sends the C3 report to the operating system. This can be one of the following:</p> <ul style="list-style-type: none"> • acpi-c2—The processor sends the C3 report using the ACPI C2 format. • acpi-c3—The processor sends the C3 report using the ACPI C3 format. • disabled—The processor does not send the C3 report. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 14	UCS-A /system/server-defaults/platform/bios-settings # set processor-c6-report-config processor-report {disabled enabled platform-default}	<p>(Optional) Determines whether the processor sends the C6 report to the operating system. This can be one of the following:</p> <ul style="list-style-type: none"> • disabled—The processor does not send the C6 report. • enabled—The processor sends the C6 report. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.

	Command or Action	Purpose
Step 15	UCS-A /system/server-defaults/platform/bios-settings # set intel-vt-directed-io-config vtd {disabled enabled platform-default}	(Optional) Specifies whether the processor uses Intel Virtualization Technology for Directed I/O. This can be one of the following: <ul style="list-style-type: none"> • disabled—The processor does not use virtualization technology. • enabled—The processor uses virtualization technology. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 16	UCS-A /system/server-defaults/platform/bios-settings # set intel-vt-directed-io-config interrupt-remapping {disabled enabled platform-default}	(Optional) Specifies whether the processor supports Intel VT-d Interrupt Remapping. This can be one of the following: <ul style="list-style-type: none"> • disabled—The processor does not support remapping. • enabled—The processor uses VT-d Interrupt Remapping as required. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 17	UCS-A /system/server-defaults/platform/bios-settings # set intel-vt-directed-io-config coherency-support {disabled enabled platform-default}	(Optional) Specifies whether the processor supports Intel VT-d Coherency. This can be one of the following: <ul style="list-style-type: none"> • disabled—The processor does not support coherency. • enabled—The processor uses VT-d Coherency as required. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 18	UCS-A /system/server-defaults/platform/bios-settings # set intel-vt-directed-io-config ats-support {disabled enabled platform-default}	(Optional) Specifies whether the processor supports Intel VT-d Address Translation Services (ATS). This can be one of the following: <ul style="list-style-type: none"> • disabled—The processor does not support ATS. • enabled—The processor uses VT-d ATS as required.

	Command or Action	Purpose
		<ul style="list-style-type: none"> • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 19	UCS-A /system/server-defaults/platform/bios-settings # set intel-vt-directed-io-config passthrough-dma {disabled enabled platform-default}	(Optional) Specifies whether the processor supports Intel VT-d Pass-through DMA. This can be one of the following: <ul style="list-style-type: none"> • disabled—The processor does not support pass-through DMA. • enabled—The processor uses VT-d Pass-through DMA as required. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 20	UCS-A /system/server-defaults/platform/bios-settings # set memory-ras-config ras-config {lockstep maximum performance mirroring platform-default}	(Optional) Specifies the memory reliability, availability and serviceability (RAS) configuration. This can be one of the following: <ul style="list-style-type: none"> • lockstep—If the DIMM pairs in the server have an identical type, size, and organization and are populated across the SMI channels, you can enable lockstep mode to minimize memory access latency and provide better performance. Lockstep is enabled by default for B400 servers. • maximum performance—System performance is optimized. • mirroring—System reliability is optimized by using half the system memory as backup. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 21	UCS-A /system/server-defaults/platform/bios-settings # set numa-config numa-optimization {disabled enabled platform-default}	(Optional) Specifies whether the BIOS supports NUMA. This can be one of the following: <ul style="list-style-type: none"> • disabled—The BIOS does not support NUMA. • enabled—The BIOS includes the ACPI tables that are required for NUMA-aware operating systems. If you enable this option, the system must disable Inter-Socket Memory interleaving on some platforms.

	Command or Action	Purpose
		<ul style="list-style-type: none"> • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 22	UCS-A /system/server-defaults/platform/bios-settings # set memory-mirroring-mode mirroring-mode {intersocket intrasocket platform-default}	(Optional) Specifies memory mirroring, which enhances system reliability by keeping two identical data images in memory. This can be one of the following: <ul style="list-style-type: none"> • intersocket—Memory is mirrored between two Integrated Memory Controllers (IMCs) across CPU sockets. • intrasocket—One IMC is mirrored with another IMC in the same socket. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 23	UCS-A /system/server-defaults/platform/bios-settings # set lv-dimm-support-config lv-ddr-mode {performance-mode power-saving-mode platform-default}	(Optional) Specifies whether the system prioritizes low voltage or high frequency memory operations. This can be one of the following: <ul style="list-style-type: none"> • performance-mode—The system prioritizes high frequency operations over low voltage operations. • power-saving-mode—The system prioritizes low voltage memory operations over high frequency memory operations. This mode may lower memory frequency in order to keep the voltage low. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 24	UCS-A /system/server-defaults/platform/bios-settings # set console-redir-config console-redir {disabled platform-default serial-port-a serial-port-b}	(Optional) Specifies whether a serial port can be used for server management tasks. This can be one of the following: <ul style="list-style-type: none"> • disabled—Serial ports cannot be used for management tasks. • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor. • serial-port-a—Serial port A is configured for management tasks.

	Command or Action	Purpose
		<ul style="list-style-type: none"> • serial-port-b—Serial port B is configured for management tasks.
Step 25	UCS-A /system/server-defaults/platform/bios-settings # set console-redir-config baud-rate {115200 57600 38400 19200 9600}	(Optional) If a serial port can be used for management tasks, set the serial port transmission speed so that it matches the rate of the remote terminal application. This can be one of the following: <ul style="list-style-type: none"> • 115200 • 57600 • 38400 • 19200 • 9600 • platform-default—The processor uses the value for this attribute contained in the BIOS defaults for the server type and vendor.
Step 26	UCS-A /system/server-defaults/platform/bios-settings # commit-buffer	Commits the transaction to the system configuration.

The following example shows how to change the NUMA default BIOS setting for a platform and commits the transaction:

```

UCS-A# scope system
UCS-A /system # scope server-defaults
UCS-A /system/server-defaults # show platform

Platform:
  Product Name Vendor      Model      Revision
  -----
  Cisco B200-M1
                Cisco Systems, Inc.
                N20-B6620-1
                0

UCS-A /system/server-defaults # scope platform 'Cisco Systems Inc' N20-B6620-1 0
UCS-A /system/server-defaults/platform # scope bios-settings
UCS-A /system/server-defaults/platform/bios-settings # set numa-config numa-optimization
disabled
UCS-A /system/server-defaults/platform/bios-settings* # commit-buffer
UCS-A /system/server-defaults/platform/bios-settings #

```

Viewing the Actual BIOS Settings for a Server

Follow this procedure to see the actual BIOS settings on a server.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope server <i>chassis-id / server-id</i>	Enters chassis server mode for the specified server.
Step 2	UCS-A /chassis/server # scope bios	Enters BIOS mode for the specified server.
Step 3	UCS-A /chassis/server/bios # scope bios-settings	Enters BIOS settings mode for the specified server.
Step 4	UCS-A /chassis/server/bios/bios-settings # show setting	Displays the BIOS setting. Enter show ? to display a list of allowed values for <i>setting</i> .

The following example displays a BIOS setting for blade 3 in chassis 1:

```
UCS-A# scope server 1/3
UCS-A /chassis/server # scope bios
UCS-A /chassis/server/bios # scope bios-settings
UCS-A /chassis/server/bios/bios-settings # show intel-vt-config

Intel Vt Config:
  Vt
  --
  Enabled

UCS-A /chassis/server/bios/bios-settings #
```

Configuring Boot Policies

Boot Policy

The boot policy determines the following:

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

For example, you can choose to 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 must include this policy 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, the server uses the default settings in the BIOS to determine the boot order.

**Important**

Changes to a boot policy may be propagated to all servers created with an updating service profile template that includes that boot policy. Reassociation of the service profile with the server to rewrite the boot order information in the BIOS is auto-triggered.

Guidelines

When you create a boot policy, you can add one or more of the following to the boot policy and specify their boot order:

Boot type	Description
SAN boot	Boots from an operating system image on the SAN. You can specify a primary and a secondary SAN boot. If the primary boot fails, the server attempts to boot from the secondary. We recommend that you use 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 exact same operating system image. Therefore, the new server appears to be the exact same server to the network.
LAN boot	Boots from a centralized provisioning server. It is frequently used to install operating systems on a server from that server.
Local disk boot	If the server has a local drive, boots from that drive. Note Cisco UCS Manager does not differentiate between the types of local drives. If an operating system has been installed on more than one local drive or on an internal USB drive (eUSB), you cannot specify which of these local drives the server should use as the boot drive.
Virtual media boot	Mimics the insertion of a physical CD-ROM disk (read-only) or floppy disk (read-write) into a server. It is typically used to manually install operating systems on a server.


Note

The default boot order is as follows:

- 1 Local disk boot
- 2 LAN boot
- 3 Virtual media read-only boot
- 4 Virtual media read-write boot

Configuring a Boot Policy

You can also create a local boot policy that is restricted to a service profile or service profile template. However, we recommend that you create a global boot policy that can be included in multiple service profiles or service profile templates.

Before You Begin

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

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # create boot-policy <i>policy-name</i> [purpose { operational utility }]	Creates a boot policy with the specified policy name, and enters organization boot policy mode. When you create the boot policy, specify the operational option. This ensures that the server boots from the operating system installed on the server. The utility options is reserved and should only be used if instructed to do so by a Cisco representative.
Step 3	UCS-A /org/boot-policy # set descr <i>description</i>	(Optional) Provides a description for the boot policy. Note If your description includes spaces, special characters, or punctuation, you must begin and end your description with quotation marks. The quotation marks do not appear in the description field of any show command output.
Step 4	UCS-A /org/boot-policy # set reboot-on-update { no yes }	Specifies whether the servers using this boot policy are automatically rebooted after you make changes to the boot order.
Step 5	UCS-A /org/boot-policy # commit-buffer	Commits the transaction to the system configuration.

The following example creates a boot policy named boot-policy-LAN, provides a description for the boot policy, specifies that servers using this policy will not be automatically rebooted when the boot order is changed, and commits the transaction:

```
UCS-A# scope org /
UCS-A /org* # create boot-policy boot-policy-LAN purpose operational
UCS-A /org/boot-policy* # set descr "Boot policy that boots from the LAN."
UCS-A /org/boot-policy* # set reboot-on-update no
UCS-A /org/boot-policy* # commit-buffer
UCS-A /org/boot-policy #
```

What to Do Next

Configure one or more of the following boot options for the boot policy and set their boot order:

- **LAN Boot**—Boots from a centralized provisioning server. It is frequently used to install operating systems on a server from that server.

If you choose the LAN Boot option, continue to [Configuring a LAN Boot for a Boot Policy](#), page 20.

- **Storage Boot**—Boots from an operating system image on the SAN. You can specify a primary and a secondary SAN boot. If the primary boot fails, the server attempts to boot from the secondary.

We recommend that you use 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 exactly the same operating system image. Therefore, the new server appears to be exactly the same server to the network.

If you choose the Storage Boot option, continue to [Configuring a Storage Boot for a Boot Policy](#), page 21.

- **Virtual Media Boot**—Mimics the insertion of a physical CD into a server. It is typically used to manually install operating systems on a server.

If you choose the Virtual Media boot option, continue to [Configuring a Virtual Media Boot for a Boot Policy](#), page 22.


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 may boot 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.

Include the boot policy in a service profile and/or template.

Configuring a LAN Boot for a Boot Policy

Before You Begin

Create a boot policy to contain the LAN boot configuration.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # scope boot-policy <i>policy-name</i>	Enters organization boot policy mode for the specified boot policy.
Step 3	UCS-A /org/boot-policy # create lan	Creates a LAN boot for the boot policy and enters organization boot policy LAN mode.
Step 4	UCS-A /org/boot-policy/lan # set order {1 2 3 4}	Specifies the boot order for the LAN boot.

	Command or Action	Purpose
Step 5	UCS-A /org/boot-policy/lan # create path {primary secondary}	Creates a primary or secondary LAN boot path and enters organization boot policy LAN path mode.
Step 6	UCS-A /org/boot-policy/lan/path # set vnic vnic-name	Specifies the vNIC to use for the LAN path to the boot image.
Step 7	UCS-A /org/boot-policy/lan/path # commit-buffer	Commits the transaction to the system configuration.

The following example enters the boot policy named lab2-boot-policy, creates a LAN boot for the policy, sets the boot order to 2, creates primary and secondary paths using the vNICs named vNIC1 and vNIC2, and commits the transaction:

```
UCS-A# scope org /
UCS-A /org* # scope boot-policy lab2-boot-policy
UCS-A /org/boot-policy* # create lan
UCS-A /org/boot-policy/lan* # set order 2
UCS-A /org/boot-policy/lan* # create path primary
UCS-A /org/boot-policy/lan/path* # set vnic vNIC1
UCS-A /org/boot-policy/lan/path* # exit
UCS-A /org/boot-policy/lan* # create path secondary
UCS-A /org/boot-policy/lan/path* # set vnic vNIC2
UCS-A /org/boot-policy/lan/path* # commit-buffer
UCS-A /org/boot-policy/lan/path #
```

What to Do Next

Include the boot policy in a service profile and/or template.

Configuring a Storage Boot for a Boot Policy

Before You Begin

Create a boot policy to contain the storage boot configuration.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org org-name	Enters organization mode for the specified organization. To enter the root organization mode, type / as the org-name.
Step 2	UCS-A /org # scope boot-policy policy-name	Enters organization boot policy mode for the specified boot policy.
Step 3	UCS-A /org/boot-policy # create storage	Creates a storage boot for the boot policy and enters organization boot policy storage mode.
Step 4	UCS-A /org/boot-policy/storage # set order {1 2 3 4}	Sets the boot order for the storage boot.
Step 5	UCS-A /org/boot-policy/storage # create {local san-image {primary secondary}}	Creates a local or SAN image storage location, and if the san-image option is specified, enters organization boot policy storage SAN image mode.

	Command or Action	Purpose
		The use of the terms primary or secondary boot devices does not imply a boot order. The effective order of boot devices within the same device class is determined by PCIe bus scan order.
Step 6	UCS-A /org/boot-policy/storage/san-image # set vhba <i>vhba-name</i>	Specifies the vHBA to be used for the storage boot.
Step 7	UCS-A /org/boot-policy/storage/san-image # create path { primary secondary }	Creates a primary or secondary storage boot path and enters organization boot policy SAN path mode. The use of the terms primary or secondary boot devices does not imply a boot order. The effective order of boot devices within the same device class is determined by PCIe bus scan order.
Step 8	UCS-A /org/boot-policy/storage/san-image/path # set { lun <i>lun-id</i> wwn <i>wwn-num</i> }	Specifies the LUN or WWN to be used for the storage path to the boot image.
Step 9	UCS-A /org/boot-policy/storage/san-image/path # commit-buffer	Commits the transaction to the system configuration.

The following example enters the boot policy named lab1-boot-policy, creates a storage boot for the policy, sets the boot order to 1, creates a primary SAN image, uses a vHBA named vHBA2, creates primary path using LUN 967295200, and commits the transaction:

```
UCS-A# scope org /
UCS-A /org* # scope boot-policy lab1-boot-policy
UCS-A /org/boot-policy* # create storage
UCS-A /org/boot-policy/storage* # set order 1
UCS-A /org/boot-policy/storage* # create san-image primary
UCS-A /org/boot-policy/storage* # set vhba vHBA2
UCS-A /org/boot-policy/storage/san-image* # create path primary
UCS-A /org/boot-policy/storage/san-image/path* # set lun 967295200
UCS-A /org/boot-policy/storage/san-image/path* # commit-buffer
UCS-A /org/boot-policy/storage/san-image/path #
```

What to Do Next

Include the boot policy in a service profile and/or template.

Configuring a Virtual Media Boot for a Boot Policy

Before You Begin

Create a boot policy to contain the virtual media boot configuration.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # scope boot-policy <i>policy-name</i>	Enters organization boot policy mode for the specified boot policy.
Step 3	UCS-A /org/boot-policy # create virtual-media { read-only read-write }	Creates a virtual media boot for the boot policy, specifies whether the virtual media is has read-only or read-write privileges, and enters organization boot policy virtual media mode.
Step 4	UCS-A /org/boot-policy/virtual-media # set order { 1 2 3 4 }	Sets the boot order for the virtual-media boot.
Step 5	UCS-A /org/boot-policy/virtual-media # commit-buffer	Commits the transaction to the system configuration.

The following example enters the boot policy named lab3-boot-policy, creates a virtual media boot with read-only privileges for the policy, sets the boot order to 3, and commits the transaction:

```
UCS-A# scope org /
UCS-A /org* # scope boot-policy lab3-boot-policy
UCS-A /org/boot-policy* # create virtual-media read-only
UCS-A /org/boot-policy/virtual-media* # set order 3
UCS-A /org/boot-policy/virtual-media* # commit-buffer
```

What to Do Next

Include the boot policy in a service profile and/or template.

Viewing a Boot Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # show boot-policy <i>policy-name</i>	Displays the boot definition (set by the create boot-definition command). If the boot-definition is not set, and if a policy is set (using the set boot-policy command), then the policy will be displayed.

The following example shows how to display boot policy information for a boot policy called boot-policy-LAN:

```
UCS-A# scope org /
UCS-A /org # show boot-policy boot-policy-LAN

Boot Policy:
```

```

Full Name: org-root/boot-policy-LAN
Name: boot-policy-LAN
Purpose: Operational
Reboot on Update: Yes
Description:
Enforce vNIC Name: No

```

Deleting a Boot Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # delete boot-policy <i>policy-name</i>	Deletes the specified boot policy.
Step 3	UCS-A /org # commit-buffer	Commits the transaction to the system configuration.

The following example deletes the boot policy named boot-policy-LAN and commits the transaction:

```

UCS-A# scope org /
UCS-A /org # delete boot-policy boot-policy-LAN
UCS-A /org* # commit-buffer
UCS-A /org #

```

Configuring IPMI Access Profiles

IPMI Access Profile

This policy allows you to determine whether IPMI commands can be sent directly to the server, using the IP address. For example, you can send commands to retrieve sensor data from the CIMC. This policy defines the IPMI access, including a username and password that can be authenticated locally on the server, and whether the access is read-only or read-write.

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

Configuring an IPMI Access Profile

Before You Begin

Obtain the following:

- Username with appropriate permissions that can be authenticated by the operating system of the server
- Password for the username
- Permissions associated with the username

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # create ipmi-access-profile <i>profile-name</i>	Creates the specified IPMI access profile and enters organization IPMI access profile mode.
Step 3	UCS-A /org/ipmi-access-profile # create epuser <i>epuser-name</i>	Creates the specified endpoint user and enters organization IPMI access profile endpoint user mode. Note More than one endpoint user can be created within an IPMI access profile, with each endpoint user having its own password and privileges.
Step 4	UCS-A /org/ipmi-access-profile/epuser # set password	Sets the password for the endpoint user. After entering the set password command, you are prompted to enter and confirm the password. For security purposes, the password that you type does not appear in the CLI.
Step 5	UCS-A /org/ipmi-access-profile/epuser # set privilege {admin readonly}	Specifies whether the endpoint user has administrative or read-only privileges.
Step 6	UCS-A /org/ipmi-access-profile/epuser # commit-buffer	Commits the transaction to the system configuration.

The following example creates an IPMI access profile named ReadOnly, creates an endpoint user named bob, sets the password and the privileges for bob, and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # create ipmi-access-profile ReadOnly
UCS-A /org/ipmi-access-profile* # create epuser bob
UCS-A /org/ipmi-access-profile/epuser* # set password
Enter a password:
Confirm the password:
UCS-A /org/ipmi-access-profile/epuser* # set privilege readonly
UCS-A /org/ipmi-access-profile/epuser* # commit-buffer
UCS-A /org/ipmi-access-profile/epuser #
```

What to Do Next

Include the IPMI profile in a service profile and/or template.

Deleting an IPMI Access Profile

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # delete ipmi-access-profile <i>profile-name</i>	Deletes the specified IPMI access profile.
Step 3	UCS-A /org # commit-buffer	Commits the transaction to the system configuration.

The following example deletes the IPMI access profile named ReadOnly and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # delete ipmi-access-profile ReadOnly
UCS-A /org* # commit-buffer
UCS-A /org #
```

Adding an Endpoint User to an IPMI Access Profile

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # scope ipmi-access-profile <i>profile-name</i>	Enters organization IPMI access profile mode for the specified IPMI access profile.
Step 3	UCS-A /org/ipmi-access-profile # create epuser <i>epuser-name</i>	Creates the specified endpoint user and enters organization IPMI access profile endpoint user mode. Note More than one endpoint user can be created within an IPMI access profile, with each endpoint user having its own password and privileges.
Step 4	UCS-A /org/ipmi-access-profile/epuser # set password	Sets the password for the endpoint user. After entering the set password command, you are prompted to enter and confirm the password. For security purposes, the password that you type does not appear in the CLI.
Step 5	UCS-A /org/ipmi-access-profile/epuser # set privilege {admin readonly}	Specifies whether the endpoint user has administrative or read-only privileges.

	Command or Action	Purpose
Step 6	UCS-A /org/ipmi-access-profile/epuser # commit-buffer	Commits the transaction to the system configuration.

The following example adds an endpoint user named alice to the IPMI access profile named ReadOnly and commits the transaction:

```
UCS-A# scope org /
UCS-A /org* # scope ipmi-access-profile ReadOnly
UCS-A /org/ipmi-access-profile* # create epuser alice
UCS-A /org/ipmi-access-profile/epuser* # set password
Enter a password:
Confirm the password:
UCS-A /org/ipmi-access-profile/epuser* # set privilege readonly
UCS-A /org/ipmi-access-profile/epuser* # commit-buffer
UCS-A /org/ipmi-access-profile/epuser #
```

Deleting an Endpoint User from an IPMI Access Profile

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # scope ipmi-access-profile <i>profile-name</i>	Enters organization IPMI access profile mode for the specified IPMI access profile.
Step 3	UCS-A /org/ipmi-access-profile # delete <i>epuser epuser-name</i>	Deletes the specified endpoint user from the IPMI access profile.
Step 4	UCS-A /org/ipmi-access-profile # commit-buffer	Commits the transaction to the system configuration.

The following example deletes the endpoint user named alice from the IPMI access profile named ReadOnly and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # scope ipmi-access-profile ReadOnly
UCS-A /org/ipmi-access-profile # delete epuser alice
UCS-A /org/ipmi-access-profile* # commit-buffer
UCS-A /org/ipmi-access-profile #
```

Configuring Local Disk Configuration Policies

Local Disk Configuration Policy

This policy configures any optional SAS local drives that have been installed on a server through the onboard RAID controller of the local drive. This policy enables you to set a local disk mode for all servers that are associated with a service profile that includes the local disk configuration policy.

The local disk modes include the following:

- **Any Configuration**—For a server configuration that carries forward the local disk configuration without any changes.
- **No Local Storage**—For a diskless server or a SAN only configuration. If you select this option, you cannot associate any service profile which uses this policy with a server that has a local disk.
- **No RAID**—For a server configuration that removes the RAID and leaves the disk MBR and payload unaltered.
- **RAID 1 Mirrored**—Data is written to two disks, providing complete data redundancy if one disk fails. The maximum array size is equal to the available space on the smaller of the two drives.
- **RAID10 Mirrored and Striped**—RAID 10 uses mirrored pairs of disks to provide complete data redundancy and high throughput rates.
- **RAID 0 Stripes**—Data is striped across all disks in the array, providing fast throughput. There is no data redundancy, and all data is lost if any disk fails.
- **RAID 6 Stripes Dual Parity**—Data is striped across all disks in the array and two parity disks are used to provide protection against the failure of up to two physical disks. In each row of data blocks, two sets of parity data are stored.
- **RAID 5 Striped Parity**—Data is striped across all disks in the array. Part of the capacity of each disk stores parity information that can be used to reconstruct data if a disk fails. RAID 5 provides good data throughput for applications with high read request rates.

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

Guidelines and Considerations for a Local Disk Configuration Policy

Before you create a local disk configuration policy, consider the following guidelines:

No Mixed HDDs and SSDs

Do not include HDDs and SSDs in a single RAID configuration or in a single blade server.

Impact of Upgrade to Release 1.3(1i) or Higher

An upgrade from an earlier Cisco UCS firmware release to release 1.3(1i) or higher has the following impact on the Protect Configuration property of the local disk configuration policy the first time servers are associated with service profiles after the upgrade:

Unassociated Servers After you upgrade the Cisco UCS instance, the initial server association proceeds without configuration errors whether or not the local disk configuration policy matches the server hardware. Even if you enable the Protect Configuration property, Cisco UCS does not protect the user data on the server if there are configuration mismatches between the local disk configuration policy on the previous service profile and the policy in the new service profile.



Note If you enable the Protect Configuration property and the local disk configuration policy encounters mismatches between the previous service profile and the new service profile, all subsequent service profile associations with the server are blocked.

Associated Servers Any servers that are already associated with service profiles do not reboot after the upgrade. Cisco UCS Manager does not report any configuration errors if there is a mismatch between the local disk configuration policy and the server hardware.

When a service profile is disassociated from a server and a new service profile associated, the setting for the Protect Configuration property in the new service profile takes precedence and overwrites the setting in the previous service profile.

Creating a Local Disk Configuration Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # create local-disk-config-policy <i>policy-name</i>	Creates a local disk configuration policy and enters local disk configuration policy mode.
Step 3	UCS-A /org/local-disk-config-policy # set descr <i>description</i>	(Optional) Provides a description for the local disk configuration policy.
Step 4	UCS-A /org/local-disk-config-policy # set mode { any-configuration no-local-storage no-raid raid-0-striped raid-1-mirrored raid-5-striped-parity raid-6-striped-dual-parity raid-10-mirrored-and-striped }	Specifies the mode for the local disk configuration policy.
Step 5	UCS-A /org/local-disk-config-policy # set protect { yes no }	Specifies whether the local disk will be protected or not.

	Command or Action	Purpose
Step 6	UCS-A /org/local-disk-config-policy # commit-buffer	Commits the transaction to the system configuration.

The following example configures a local disk configuration policy and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # create local-disk-config-policy DiskPolicy7
UCS-A /org/local-disk-config-policy* # set mode raid-1-mirrored
UCS-A /org/local-disk-config-policy* # set protect yes
UCS-A /org/local-disk-config-policy* # commit-buffer
UCS-A /org/local-disk-config-policy #
```

Viewing a Local Disk Configuration Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # show local-disk-config-policy <i>policy-name</i>	Displays the local disk policy. If you have not configured a local disk policy, the local disk configuration (created by the create local-disk-config command) displays. Displays the local disk definition (set by the create local-disk-config command). If the serial over LAN definition is not set, and if a policy is set (using the set local-disk-config-policy command), then the policy will be displayed.

The following example shows how to display local disk policy information for a local disk configuration policy called DiskPolicy7:

```
UCS-A# scope org /
UCS-A /org # show local-disk-config-policy DiskPolicy7
```

```
Local Disk Config Policy:
Name: DiskPolicy7
Mode: Raid 1 Mirrored
Description:
Protect Configuration: Yes
```

Deleting a Local Disk Configuration Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # delete local-disk-config-policy <i>policy-name</i>	Deletes the specified local disk configuration policy.
Step 3	UCS-A /org # commit-buffer	Commits the transaction to the system configuration.

The following example deletes the local disk configuration policy named DiskPolicy7 and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # delete local-disk-config-policy DiskPolicy7
UCS-A /org* # commit-buffer
UCS-A /org #
```

Configuring Scrub Policies

Scrub Policy

This policy determines what happens to local data and to the BIOS settings on a server during the discovery process and when the server is disassociated from a service profile. Depending upon how you configure a scrub policy, the following can occur at those times:

Disk Scrub

One of the following occurs to the data on any local drives on disassociation:

- If enabled, destroys all data on any local drives
- If disabled, preserves all data on any local drives, including local storage configuration

BIOS Settings Scrub

One of the following occurs to the BIOS settings when a service profile containing the scrub policy is disassociated from a server:

- If enabled, erases all BIOS settings for the server and resets them to the BIOS defaults for that server type and vendor
- If disabled, preserves the existing BIOS settings on the server

Creating a Scrub Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # create scrub-policy <i>policy-name</i>	Creates a scrub policy with the specified policy name, and enters organization scrub policy mode.
Step 3	UCS-A /org/scrub-policy # set descr <i>description</i>	(Optional) Provides a description for the scrub policy. Note If your description includes spaces, special characters, or punctuation, you must begin and end your description with quotation marks. The quotation marks will not appear in the description field of any show command output.
Step 4	UCS-A /org/scrub-policy # set disk-scrub {no yes}	Disables or enables disk scrubbing on servers using this scrub policy as follows: <ul style="list-style-type: none"> • If enabled, destroys all data on any local drives • If disabled, preserves all data on any local drives, including local storage configuration
Step 5	UCS-A /org/scrub-policy # set bios-settings-scrub {no yes}	Disables or enables BIOS settings scrubbing on servers using this scrub policy as follows: <ul style="list-style-type: none"> • If enabled, erases all BIOS settings for the server and resets them to the BIOS defaults for that server type and vendor • If disabled, preserves the existing BIOS settings on the server
Step 6	UCS-A /org/scrub-policy # commit-buffer	Commits the transaction to the system configuration.

The following example creates a scrub policy named ScrubPolicy2, enables disk scrubbing on servers using the scrub policy, and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # create scrub-policy ScrubPolicy2
UCS-A /org/scrub-policy* # set descr "Scrub disk but not BIOS."
UCS-A /org/scrub-policy* # set disk-scrub yes
UCS-A /org/scrub-policy* # set bios-settings-scrub no
UCS-A /org/scrub-policy* # commit-buffer
UCS-A /org/scrub-policy #
```


Deleting a Scrub Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # delete scrub-policy <i>policy-name</i>	Deletes the specified scrub policy.
Step 3	UCS-A /org # commit-buffer	Commits the transaction to the system configuration.

The following example deletes the scrub policy named ScrubPolicy2 and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # delete scrub-policy ScrubPolicy2
UCS-A /org* # commit-buffer
UCS-A /org #
```

Configuring Serial over LAN Policies

Serial over LAN Policy

This policy sets the configuration for the serial over LAN connection for all servers associated with service profiles that use the policy. By default, the serial over LAN connection is disabled.

If you implement a serial over LAN policy, we recommend that you also create an IPMI profile.

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

Configuring a Serial over LAN Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # create sol-policy <i>policy-name</i>	Creates a serial over LAN policy and enters organization serial over LAN policy mode.
Step 3	UCS-A /org/sol-policy # set descr <i>description</i>	(Optional) Provides a description for the policy.

	Command or Action	Purpose
		Note If your description includes spaces, special characters, or punctuation, you must begin and end your description with quotation marks. The quotation marks will not appear in the description field of any show command output.
Step 4	UCS-A /org/sol-policy # set speed {115200 19200 38400 57600 9600}	Specifies the serial baud rate.
Step 5	UCS-A /org/sol-policy # { disable enable }	Disables or enables the serial over LAN policy. By default, the serial over LAN policy is disabled; you must enable it before it can be applied.
Step 6	UCS-A /org/sol-policy # commit-buffer	Commits the transaction to the system configuration.

The following example creates a serial over LAN policy named Sol9600, provides a description for the policy, sets the speed to 9,600 baud, enables the policy, and commits the transaction:

```
UCS-A# scope org /
UCS-A /org* # create sol-policy Sol9600
UCS-A /org/sol-policy* # set descr "Sets serial over LAN policy to 9600 baud."
UCS-A /org/sol-policy* # set speed 9600
UCS-A /org/sol-policy* # enable
UCS-A /org/sol-policy* # commit-buffer
UCS-A /org/sol-policy #
```

Viewing a Serial over LAN Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # show sol-policy <i>policy-name</i>	Displays the serial over LAN definition (set by the create sol-config command). If the serial over LAN definition is not set, and if a policy is set (using the set sol-policy command), then the policy will be displayed.

The following example shows how to display serial over LAN information for a serial over LAN policy called Sol9600:

```
UCS-A# scope org /
UCS-A /org # show sol-policy Sol9600
```

```
SOL Policy:
Full Name: Sol9600
SOL State: Enable
Speed: 9600
Description:
```

Deleting a Serial over LAN Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # delete sol-policy <i>policy-name</i>	Deletes the specified serial over LAN policy.
Step 3	UCS-A /org # commit-buffer	Commits the transaction to the system configuration.

The following example deletes the serial over LAN policy named Sol9600 and commits the transaction:

```
UCS-A# scope org /
UCS-A /org* # delete sol-policy Sol9600
UCS-A /org* # commit-buffer
UCS-A /org #
```

Configuring Server Autoconfiguration Policies

Server Autoconfiguration Policy

Cisco UCS Manager uses this policy to determine how to configure a new server. If you create a server autoconfiguration policy, the following occurs when a new server starts:

- 1 The qualification in the server autoconfiguration policy is executed against the server.
- 2 If the server meets the required qualifications, the server is associated with a service profile created from the service profile template configured in the server autoconfiguration policy. The name of that service profile is based on the name given to the server by Cisco UCS Manager.
- 3 The service profile is assigned to the organization configured in the server autoconfiguration policy.

Configuring a Server Autoconfiguration Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .

	Command or Action	Purpose
Step 2	UCS-A /org # create server-autoconfig-policy <i>policy-name</i>	Creates a server autoconfiguration policy with the specified policy name, and enters organization server autoconfiguration policy mode.
Step 3	UCS-A /org/server-autoconfig-policy # set descr <i>description</i>	(Optional) Provides a description for the policy. Note If your description includes spaces, special characters, or punctuation, you must begin and end your description with quotation marks. The quotation marks will not appear in the description field of any show command output.
Step 4	UCS-A /org/server-autoconfig-policy # set destination org <i>org-name</i>	(Optional) Specifies the organization for which the server is to be used.
Step 5	UCS-A /org/server-autoconfig-policy # set qualifier <i>server-qual-name</i>	(Optional) Specifies server pool policy qualification to use for qualifying the server.
Step 6	UCS-A /org/server-autoconfig-policy # set template <i>profile-name</i>	(Optional) Specifies a service profile template to use for creating a service profile instance for the server.
Step 7	UCS-A /org/server-autoconfig-policy # commit-buffer	Commits the transaction to the system configuration.

The following example creates a server autoconfiguration policy named AutoConfigFinance, provides a description for the policy, specifies finance as the destination organization, ServPoolQual22 as the server pool policy qualification, and ServTemp2 as the service profile template, and commits the transaction:

```
UCS-A# scope org /
UCS-A /org* # create server-autoconfig-policy AutoConfigFinance
UCS-A /org/server-autoconfig-policy* # set descr "Server Autoconfiguration Policy for Finance"
UCS-A /org/server-autoconfig-policy* # set destination org finance
UCS-A /org/server-autoconfig-policy* # set qualifier ServPoolQual22
UCS-A /org/server-autoconfig-policy* # set template ServTemp2
UCS-A /org/server-autoconfig-policy* # commit-buffer
UCS-A /org/server-autoconfig-policy #
```

Deleting a Server Autoconfiguration Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .

	Command or Action	Purpose
Step 2	UCS-A /org # delete server-autoconfig-policy <i>policy-name</i>	Deletes the specified server autoconfiguration policy.
Step 3	UCS-A /org # commit-buffer	Commits the transaction to the system configuration.

The following example deletes the server autoconfiguration policy named AutoConfigFinance and commits the transaction:

```
UCS-A# scope org /
UCS-A /org* # delete server-autoconfig-policy AutoConfigFinance
UCS-A /org* # commit-buffer
UCS-A /org #
```

Configuring Server Discovery Policies

Server Discovery Policy

This discovery policy determines how the system reacts when you add a new server. If you create a server discovery policy, you can control whether the system conducts a deep discovery when a server is added to a chassis, or whether a user must first acknowledge the new server. By default, the system conducts a full discovery.

If you create a server discovery policy, the following occurs when a new server starts:

- 1 The qualification in the server discovery policy is executed against the server.
- 2 If the server meets the required qualifications, Cisco UCS Manager applies the following to the server:
 - Depending upon the option selected for the action, either discovers the new server immediately or waits for a user to acknowledge the new server
 - Applies the scrub policy to the server

Configuring a Server Discovery Policy

Before You Begin

If you plan to associate this policy with a server pool, create server pool policy qualifications.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org /	Enters the root organization mode.
		Note Chassis discovery policies can only be accessed from the root organization.

	Command or Action	Purpose
Step 2	UCS-A /org # create server-disc-policy <i>policy-name</i>	Creates a server discovery policy with the specified policy name, and enters org server discovery policy mode.
Step 3	UCS-A /org/server-disc-policy # set action {diag immediate user-acknowledged}	Specifies when the system will attempt to discover new servers.
Step 4	UCS-A /org/chassis-disc-policy # set descr <i>description</i>	(Optional) Provides a description for the server discovery policy. Note If your description includes spaces, special characters, or punctuation, you must begin and end your description with quotation marks. The quotation marks will not appear in the description field of any show command output.
Step 5	UCS-A /org/server-disc-policy # set qualifier <i>qualifier</i>	(Optional) Uses the specified server pool policy qualifications to associates this policy with a server pool.
Step 6	UCS-A /org/server-disc-policy # set scrub-policy	Specifies the scrub policy to be used by this policy. The scrub policy defines whether the disk drive on a server should be scrubbed clean upon discovery.
Step 7	UCS-A /org/server-disc-policy # commit-buffer	Commits the transaction to the system configuration.

The following example creates a server discovery policy named ServDiscPolExample, sets it to immediately discover new servers, provides a description for the policy, specifies the server pool policy qualifications and scrub policy, and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # create server-disc-policy ServDiscPolExample
UCS-A /org/server-disc-policy* # set action immediate
UCS-A /org/server-disc-policy* # set descr "This is an example server discovery policy."
UCS-A /org/server-disc-policy* # set qualifier ExampleQual
UCS-A /org/server-disc-policy* # set scrub-policy NoScrub
UCS-A /org/server-disc-policy # commit-buffer
```

What to Do Next

Include the server discovery policy in a service profile and/or template.

Deleting a Server Discovery Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .

	Command or Action	Purpose
Step 2	UCS-A /org # Delete server-disc-policy <i>policy-name</i>	Deletes the specified server discovery policy.
Step 3	UCS-A /org/server-disc-policy # commit-buffer	Commits the transaction to the system configuration.

The following example deletes the server discovery policy named ServDiscPolExample and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # delete server-disc-policy ServDiscPolExample
UCS-A /org* # commit-buffer
UCS-A /org #
```

Configuring Server Inheritance Policies

Server Inheritance Policy

This policy is invoked during the server discovery process to create a service profile for the server. All service profiles created from this policy use the values burned into the blade at manufacture. The policy performs the following:

- Analyzes the inventory of the server
- If configured, assigns the server to the selected organization
- Creates a service profile for the server with the identity burned into the server at manufacture

You cannot migrate a service profile created with this policy to another server.

Configuring a Server Inheritance Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # create server-inherit-policy <i>policy-name</i>	Creates a server inheritance policy with the specified policy name, and enters organization server inheritance policy mode.
Step 3	UCS-A /org/server-inherit-policy # set descr <i>description</i>	(Optional) Provides a description for the policy.

	Command or Action	Purpose
		Note If your description includes spaces, special characters, or punctuation, you must begin and end your description with quotation marks. The quotation marks will not appear in the description field of any show command output.
Step 4	UCS-A /org/server-inherit-policy # set destination org <i>org-name</i>	(Optional) Specifies the organization for which the server is to be used.
Step 5	UCS-A /org/server-inherit-policy # set qualifier <i>server-qual-name</i>	(Optional) Specifies server pool policy qualification to use for qualifying the server.
Step 6	UCS-A /org/server-inherit-policy # commit-buffer	Commits the transaction to the system configuration.

The following example creates a server inheritance policy named InheritEngineering, provides a description for the policy, specifies engineering as the destination organization and ServPoolQual22 as the server pool policy qualification, and commits the transaction:

```
UCS-A# scope org /
UCS-A /org* # create server-inherit-policy InheritEngineering
UCS-A /org/server-inherit-policy* # set descr "Server Inheritance Policy for Engineering"
UCS-A /org/server-inherit-policy* # set destination org engineering
UCS-A /org/server-inherit-policy* # set qualifier ServPoolQual22
UCS-A /org/server-inherit-policy* # commit-buffer
UCS-A /org/server-inherit-policy #
```

Deleting a Server Inheritance Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # delete server-inherit-policy <i>policy-name</i>	Deletes the specified server inheritance policy.
Step 3	UCS-A /org # commit-buffer	Commits the transaction to the system configuration.

The following example deletes the server inheritance policy named InheritEngineering and commits the transaction:

```
UCS-A# scope org /
UCS-A /org* # delete server-inherit-policy InheritEngineering
UCS-A /org* # commit-buffer
UCS-A /org #
```


Configuring Server Pool Policies

Server Pool Policy

This policy is invoked during the server discovery process. It determines what happens if server pool policy qualifications match a server to the target pool specified in the policy.

If a server qualifies for more than one pool and those pools have server pool policies, the server is added to all those pools.

Configuring a Server Pool Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # create pooling-policy <i>policy-name</i>	Creates a server pool policy with the specified name, and enters organization pooling policy mode.
Step 3	UCS-A /org/pooling-policy # set descr <i>description</i>	(Optional) Provides a description for the server pool policy. Note If your description includes spaces, special characters, or punctuation, you must begin and end your description with quotation marks. The quotation marks will not appear in the description field of any show command output.
Step 4	UCS-A /org/pooling-policy # set pool <i>pool-distinguished-name</i>	Specifies the server pool to use with the server pool policy. You must specify the full distinguished name for the pool.
Step 5	UCS-A /org/pooling-policy # set qualifier <i>qualifier-name</i>	Specifies the server pool qualifier to use with the server pool policy.
Step 6	UCS-A /org/pooling-policy # commit-buffer	Commits the transaction to the system configuration.

The following example creates a server pool policy named ServerPoolPolicy4 and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # create pooling-policy ServerPoolPolicy4
UCS-A /org/pooling-policy* # set pool org-root/compute-pool-pool3
UCS-A /org/pooling-policy* # set qualifier ServPoolQual8
UCS-A /org/pooling-policy* # commit-buffer
UCS-A /org/pooling-policy #
```

Deleting a Server Pool Policy

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type <i>/</i> as the <i>org-name</i> .
Step 2	UCS-A /org # delete pooling-policy <i>policy-name</i>	Deletes the specified server pool policy.
Step 3	UCS-A /org # commit-buffer	Commits the transaction to the system configuration.

The following example deletes the server pool policy named ServerPoolPolicy4 and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # delete pooling-policy ServerPoolPolicy4
UCS-A /org/pooling-policy* # commit-buffer
UCS-A /org/pooling-policy #
```

Configuring Server Pool Policy Qualifications

Server Pool Policy Qualifications

This policy qualifies servers based on the inventory of a server conducted during the discovery process. The qualifications are individual rules that you configure in the policy to determine whether a server meets the selection criteria. For example, you can create a rule that specifies the minimum memory capacity for servers in a data center pool.

Qualifications are used in other policies to place servers, not just by the server pool policies. For example, if a server meets the criteria in a qualification policy, it can be added to one or more server pools or have a service profile automatically associated with it.

You can use the server pool policy qualifications to qualify servers according to the following criteria:

- Adapter type
- Chassis location
- Memory type and configuration
- CPU cores, type, and configuration
- Storage configuration and capacity
- Server model

Depending upon the implementation, you may configure several policies with server pool policy qualifications including the following:

- Autoconfiguration policy

- Chassis discovery policy
- Server discovery policy
- Server inheritance policy
- Server pool policy

Creating a Server Pool Policy Qualification

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # create server-qual <i>server-qual-name</i>	Creates a server pool qualification with the specified name, and enters organization server qualification mode.
Step 3	UCS-A /org/server-qual # commit-buffer	Commits the transaction to the system configuration.

The following example creates a server pool qualification named ServPoolQual22 and commits the transaction:

```
UCS-A# scope org /
UCS-A /org* # create server-qual ServPoolQual22
UCS-A /org/server-qual* # commit-buffer
UCS-A /org/server-qual #
```

What to Do Next

Configure one or more of the following server component qualifications:

- Adapter qualification
- Chassis qualification
- Memory qualification
- Processor qualification
- Storage qualification

Deleting a Server Pool Policy Qualification

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # delete server-qual <i>server-qual-name</i>	Deletes the specified server pool qualification.
Step 3	UCS-A /org/server-qual # commit-buffer	Commits the transaction to the system configuration.

The following example deletes the server pool qualification named ServPoolQual22 and commits the transaction:

```
UCS-A# scope org /
UCS-A /org* # delete server-qual ServPoolQual22
UCS-A /org* # commit-buffer
UCS-A /org #
```

Creating an Adapter Qualification

Before You Begin

Create a server pool policy qualification.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # scope server-qual <i>server-qual-name</i>	Enters organization server qualification mode for the specified server pool policy qualification.
Step 3	UCS-A /org/server-qual # create adapter	Creates an adapter qualification and enters organization server qualification adapter mode.
Step 4	UCS-A /org/server-qual/adapter # create cap-qual <i>adapter-type</i>	Creates an adapter capacity qualification for the specified adapter type and enters organization server qualification adapter capacity qualification mode. The <i>adapter-type</i> argument can be any of the following values: <ul style="list-style-type: none"> • fcoe—Fibre Channel over Ethernet • non-virtualized-eth-if—Non-virtualized Ethernet interface

	Command or Action	Purpose
		<ul style="list-style-type: none"> • non-virtualized-fc-if—Non-virtualized Fibre Channel interface • path-encap-consolidated—Path encapsulation consolidated • path-encap-virtual—Path encapsulation virtual • protected-eth-if—Protected Ethernet interface • protected-fc-if—Protected Fibre Channel interface • protected-fcoe—Protected Fibre Channel over Ethernet • virtualized-eth-if—Virtualized Ethernet interface • virtualized-fc-if—Virtualized Fibre Channel interface • virtualized-scsi-if—Virtualized SCSI interface
Step 5	UCS-A /org/server-qual/adapter/cap-qual # set maximum { <i>max-cap</i> unspecified }	Specifies the maximum capacity for the selected adapter type.
Step 6	UCS-A /org/server-qual/adapter/cap-qual # commit-buffer	Commits the transaction to the system configuration.

The following example creates and configures an adapter qualification for a non-virtualized Ethernet interface and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # scope server-qual ServPoolQual22
UCS-A /org/server-qual # create adapter
UCS-A /org/server-qual/adapter* # create cap-qual non-virtualized-eth-if
UCS-A /org/server-qual/adapter/cap-qual* # set maximum 2500000000
UCS-A /org/server-qual/adapter/cap-qual* # commit-buffer
UCS-A /org/server-qual/adapter/cap-qual #
```

Deleting an Adapter Qualification

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # scope server-qual <i>server-qual-name</i>	Enters organization server qualification mode for the specified server pool policy qualification.

	Command or Action	Purpose
Step 3	UCS-A /org/server-qual # delete adapter	Deletes the adapter qualification from the server pool policy qualification.
Step 4	UCS-A /org/server-qual # commit-buffer	Commits the transaction to the system configuration.

The following example deletes the adapter qualification from the server pool policy qualification named ServPoolQual22 and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # scope server-qual ServPoolQual22
UCS-A /org/server-qual # delete adapter
UCS-A /org/server-qual* # commit-buffer
UCS-A /org/server-qual #
```

Configuring a Chassis Qualification

Before You Begin

Create a server pool policy qualification.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # scope server-qual <i>server-qual-name</i>	Enters organization server qualification mode for the specified server pool policy qualification.
Step 3	UCS-A /org/server-qual # create chassis <i>min-chassis-num max-chassis-num</i>	Creates a chassis qualification for the specified chassis range and enters organization server qualification chassis mode.
Step 4	UCS-A /org/server-qual/chassis # create slot <i>min-slot-num max-slot-num</i>	Creates a chassis slot qualification for the specified slot range and enters organization server qualification chassis slot mode.
Step 5	UCS-A /org/server-qual/chassis/slot # commit-buffer	Commits the transaction to the system configuration.

The following example configures a chassis qualification for slots 1 to 4 on chassis 1 and 2 and commits the transaction:

```
UCS-A# scope org /
UCS-A /org* # scope server-qual ServPoolQual22
UCS-A /org/server-qual* # create chassis 1 2
UCS-A /org/server-qual/chassis* # create slot 1 4
UCS-A /org/server-qual/chassis/slot* # commit-buffer
UCS-A /org/server-qual/chassis/slot #
```

Deleting a Chassis Qualification

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # scope server-qual <i>server-qual-name</i>	Enters organization server qualification mode for the specified server pool policy qualification.
Step 3	UCS-A /org/server-qual # delete chassis <i>min-chassis-num max-chassis-num</i>	Deletes the chassis qualification for the specified chassis range.
Step 4	UCS-A /org/server-qual # commit-buffer	Commits the transaction to the system configuration.

The following example deletes the chassis qualification for chassis 1 and 2 and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # scope server-qual ServPoolQual22
UCS-A /org/server-qual # delete chassis 1 2
UCS-A /org/server-qual* # commit-buffer
UCS-A /org/server-qual #
```

Creating a CPU Qualification

Before You Begin

Create a server pool policy qualification.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # scope server-qual <i>server-qual-name</i>	Enters organization server qualification mode for the specified server pool policy qualification.
Step 3	UCS-A /org/server-qual # create cpu	Creates a CPU qualification and enters organization server qualification processor mode.
Step 4	UCS-A /org/server-qual/cpu # set arch { any dual-core-opteron intel-p4-c opteron pentium-4 turion-64 xeon xeon-mp }	Specifies the processor architecture type.

	Command or Action	Purpose
Step 5	UCS-A /org/server-qual/cpu # set maxcores { <i>max-core-num</i> unspecified }	Specifies the maximum number of processor cores.
Step 6	UCS-A /org/server-qual/cpu # set mincores { <i>min-core-num</i> unspecified }	Specifies the minimum number of processor cores.
Step 7	UCS-A /org/server-qual/cpu # set maxprocs { <i>max-proc-num</i> unspecified }	Specifies the maximum number of processors.
Step 8	UCS-A /org/server-qual/cpu # set minprocs { <i>min-proc-num</i> unspecified }	Specifies the minimum number of processors.
Step 9	UCS-A /org/server-qual/cpu # set maxthreads { <i>max-thread-num</i> unspecified }	Specifies the maximum number of threads.
Step 10	UCS-A /org/server-qual/cpu # set minthreads { <i>min-thread-num</i> unspecified }	Specifies the minimum number of threads.
Step 11	UCS-A /org/server-qual/cpu # set stepping { <i>step-num</i> unspecified }	Specifies the processor stepping number.
Step 12	UCS-A /org/server-qual/cpu # set model-regex <i>regex</i>	Specifies a regular expression that the processor name must match.
Step 13	UCS-A /org/server-qual/cpu # commit-buffer	Commits the transaction to the system configuration.

The following example creates and configures a CPU qualification and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # scope server-qual ServPoolQual22
UCS-A /org/server-qual # create processor
UCS-A /org/server-qual/cpu* # set arch xeon
UCS-A /org/server-qual/cpu* # set maxcores 8
UCS-A /org/server-qual/cpu* # set mincores 4
UCS-A /org/server-qual/cpu* # set maxprocs 2
UCS-A /org/server-qual/cpu* # set minprocs 1
UCS-A /org/server-qual/cpu* # set maxthreads 16
UCS-A /org/server-qual/cpu* # set minthreads 8
UCS-A /org/server-qual/cpu* # set stepping 5
UCS-A /org/server-qual/cpu* # commit-buffer
UCS-A /org/server-qual/cpu #
```

Deleting a CPU Qualification

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .

	Command or Action	Purpose
Step 2	UCS-A /org # scope server-qual <i>server-qual-name</i>	Enters organization server qualification mode for the specified server pool policy qualification.
Step 3	UCS-A /org/server-qual # delete cpu	Deletes the processor qualification.
Step 4	UCS-A /org/server-qual # commit-buffer	Commits the transaction to the system configuration.

The following example deletes the processor qualification and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # scope server-qual ServPoolQual22
UCS-A /org/server-qual # delete cpu
UCS-A /org/server-qual* # commit-buffer
UCS-A /org/server-qual #
```

Creating a Memory Qualification

Before You Begin

Create a server pool policy qualification.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # scope server-qual <i>server-qual-name</i>	Enters organization server qualification mode for the specified server pool policy qualification.
Step 3	UCS-A /org/server-qual # create memory	Creates a memory qualification and enters organization server qualification memory mode.
Step 4	UCS-A /org/server-qual/memory # set clock <i>{clock-num unspec}</i>	Specifies the memory clock speed.
Step 5	UCS-A /org/server-qual/memory # set maxcap <i>{max-cap-num unspec}</i>	Specifies the maximum capacity of the memory array.
Step 6	UCS-A /org/server-qual/memory # set mincap <i>{min-cap-num unspec}</i>	Specifies the minimum capacity of the memory array.
Step 7	UCS-A /org/server-qual/memory # set speed <i>{speed-num unspec}</i>	Specifies the memory data rate.
Step 8	UCS-A /org/server-qual/memory # set units <i>{unit-num unspec}</i>	Specifies the number of memory units (DRAM chips mounted to the memory board).
Step 9	UCS-A /org/server-qual/memory # set width <i>{width-num unspec}</i>	Specifies the bit width of the data bus.

	Command or Action	Purpose
Step 10	UCS-A /org/server-qual/memory # commit-buffer	Commits the transaction to the system configuration.

The following example creates and configures a memory qualification and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # scope server-qual ServPoolQual122
UCS-A /org/server-qual # create memory
UCS-A /org/server-qual/memory* # set clock 1067
UCS-A /org/server-qual/memory* # set maxcap 4096
UCS-A /org/server-qual/memory* # set mincap 2048
UCS-A /org/server-qual/memory* # set speed unspec
UCS-A /org/server-qual/memory* # set units 16
UCS-A /org/server-qual/memory* # set width 64
UCS-A /org/server-qual/memory* # commit-buffer
UCS-A /org/server-qual/memory #
```

Deleting a Memory Qualification

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # scope server-qual <i>server-qual-name</i>	Enters organization server qualification mode for the specified server pool policy qualification.
Step 3	UCS-A /org/server-qual # delete memory	Deletes the memory qualification.
Step 4	UCS-A /org/server-qual # commit-buffer	Commits the transaction to the system configuration.

The following example deletes the memory qualification and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # scope server-qual ServPoolQual122
UCS-A /org/server-qual # delete memory
UCS-A /org/server-qual* # commit-buffer
UCS-A /org/server-qual #
```

Creating a Physical Qualification

Before You Begin

Create a server pool policy qualification.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # scope server-qual <i>server-qual-name</i>	Enters organization server qualification mode for the specified server pool policy qualification.
Step 3	UCS-A /org/server-qual # create physical-qual	Creates a physical qualification and enters organization server qualification physical mode.
Step 4	UCS-A /org/server-qual/physical-qual # set model-regex <i>regex</i>	Specifies a regular expression that the model name must match.
Step 5	UCS-A /org/server-qual/physical-qual # commit-buffer	Commits the transaction to the system configuration.

The following example creates and configures a physical qualification and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # scope server-qual ServPoolQual22
UCS-A /org/server-qual # create physical-qual
UCS-A /org/server-qual/physical-qual* # set model-regex
UCS-A /org/server-qual/physical-qual* # commit-buffer
UCS-A /org/server-qual/physical-qual #
```

Deleting a Physical Qualification

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # scope server-qual <i>server-qual-name</i>	Enters organization server qualification mode for the specified server pool policy qualification.
Step 3	UCS-A /org/server-qual # delete physical-qual	Deletes the physical qualification.
Step 4	UCS-A /org/server-qual # commit-buffer	Commits the transaction to the system configuration.

The following example deletes a physical qualification and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # scope server-qual ServPoolQual22
UCS-A /org/server-qual # delete physical-qual
UCS-A /org/server-qual* # commit-buffer
UCS-A /org/server-qual #
```

Creating a Storage Qualification

Before You Begin

Create a server pool policy qualification.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # scope server-qual <i>server-qual-name</i>	Enters organization server qualification mode for the specified server pool policy qualification.
Step 3	UCS-A /org/server-qual # create storage	Creates a storage qualification and enters organization server qualification storage mode.
Step 4	UCS-A /org/server-qual/storage # set blocksize { <i>block-size-num</i> unspecified }	Specifies the storage block size.
Step 5	UCS-A /org/server-qual/storage # set maxcap { <i>max-cap-num</i> unspecified }	Specifies the maximum capacity of the storage array.
Step 6	UCS-A /org/server-qual/storage # set mincap { <i>min-cap-num</i> unspecified }	Specifies the minimum capacity of the storage array.
Step 7	UCS-A /org/server-qual/storage # set numberofblocks { <i>block-num</i> unspecified }	Specifies the number of blocks.
Step 8	UCS-A /org/server-qual/storage # set perdiskcap { <i>disk-cap-num</i> unspecified }	Specifies the per-disk capacity.
Step 9	UCS-A /org/server-qual/storage # set units { <i>unit-num</i> unspecified }	Specifies the number of storage units.
Step 10	UCS-A /org/server-qual/storage # commit-buffer	Commits the transaction to the system configuration.

The following example creates and configures a storage qualification and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # scope server-qual ServPoolQual22
UCS-A /org/server-qual # create storage
UCS-A /org/server-qual/storage* # set blocksize 512
UCS-A /org/server-qual/storage* # set maxcap 420000
UCS-A /org/server-qual/storage* # set mincap 140000
UCS-A /org/server-qual/storage* # set numberofblocks 287277984
UCS-A /org/server-qual/storage* # set perdiskcap 140000
UCS-A /org/server-qual/storage* # set units 1
UCS-A /org/server-qual/storage* # commit-buffer
UCS-A /org/server-qual/storage #
```

Deleting a Storage Qualification

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # scope server-qual <i>server-qual-name</i>	Enters organization server qualification mode for the specified server pool policy qualification.
Step 3	UCS-A /org/server-qual # delete storage	Deletes the storage qualification.
Step 4	UCS-A /org/server-qual/ # commit-buffer	Commits the transaction to the system configuration.

The following example deletes the storage qualification and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # scope server-qual ServPoolQual22
UCS-A /org/server-qual # delete storage
UCS-A /org/server-qual* # commit-buffer
UCS-A /org/server-qual #
```

Configuring vNIC/vHBA Placement Profiles

vNIC/vHBA Placement Policies

vNIC/vHBA placement policies are used to assign vNICs or vHBAs to the physical adapters on a server. Each vNIC/vHBA placement policy contains two virtual network interface connections (vCons) that are virtual representations of the physical adapters. When a vNIC/vHBA placement policy is assigned to a service profile, and the service profile is associated to a server, the vCons in the vNIC/vHBA placement policy are assigned to the physical adapters. For servers with only one adapter, both vCons are assigned to the adapter; for servers with two adapters, one vCon is assigned to each adapter.

You can assign vNICs or vHBAs to either of the two vCons, and they are then assigned to the physical adapters based on the vCon assignment during server association. Additionally, vCons use the following selection preference criteria to assign vHBAs and vNICs:

All	The vCon is used for vNICs or vHBAs assigned to it, vNICs or vHBAs not assigned to either vCon, and dynamic vNICs or vHBAs.
Assigned-Only	The vCon is reserved for only vNICs or vHBAs assigned to it.
Exclude-Dynamic	The vCon is not used for dynamic vNICs or vHBAs.

Exclude-Unassigned

The vCon is not used for vNICs or vHBAs not assigned to the vCon. The vCon is used for dynamic vNICs and vHBAs.

For servers with two adapters, if you do not include a vNIC/vHBA placement policy in a service profile, or you do not configure vCons for a service profile, Cisco UCS equally distributes the vNICs and vHBAs between the two adapters.

Configuring a vNIC/vHBA Placement Profile

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type / as the <i>org-name</i> .
Step 2	UCS-A /org # create vcon-policy <i>policy-name</i>	Creates the specified vNIC/vHBA placement profile and enters organization vcon policy mode.
Step 3	UCS-A /org/vcon-policy # set descr <i>description</i>	(Optional) Provides a description for the vNIC/vHBA Placement Profile. Note If your description includes spaces, special characters, or punctuation, you must begin and end your description with quotation marks. The quotation marks will not appear in the description field of any show command output.
Step 4	UCS-A /org/vcon-policy # set vcon {1 2} selection {all assigned-only exclude-dynamic exclude-unassigned}	Specifies the selection preference for the specified vCon.
Step 5	UCS-A /org/vcon-policy # commit-buffer	Commits the transaction.

The following example creates a vNIC/vHBA placement policy named Adapter1All, places all vNICs and vHBAs on adapter 1, and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # create vcon-policy Adapter1
UCS-A /org/vcon-policy* # set descr "This profile places all vNICs and vHBAs on adapter 1."
UCS-A /org/vcon-policy* # set vcon 1 selection all
UCS-A /org/vcon-policy* # commit-buffer
UCS-A /org/vcon-policy* #
UCS-A /org #
```

Deleting a vNIC/vHBA Placement Profile

Procedure

	Command or Action	Purpose
Step 1	UCS-A# scope org <i>org-name</i>	Enters organization mode for the specified organization. To enter the root organization mode, type <i>/</i> as the <i>org-name</i> .
Step 2	UCS-A /org # delete vcon-policy <i>policy-name</i>	Deletes the specified vNIC/vHBA placement profile.
Step 3	UCS-A /org # commit-buffer	Commits the transaction.

The following example deletes the vNIC/vHBA placement profile named Adapter1All and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # delete vcon-policy Adapter1All
UCS-A /org* # commit-buffer
UCS-A /org #
```

