Managing the Server

This chapter includes the following sections:

Server Boot Order

Using Cisco IMC, you can configure the order in which the server attempts to boot from available boot device types. In the legacy boot order configuration, Cisco IMC allows you to reorder the device types but not the devices within the device types. With the precision boot order configuration, you can have a linear ordering of the devices. In the web UI or CLI you can change the boot order and boot mode, add multiple devices under each device types, rearrange the boot order, set parameters for each device type.

When you change the boot order configuration, Cisco IMC sends the configured boot order to BIOS the next time that server is rebooted. To implement the new boot order, reboot the server after you make the configuration change. The new boot order takes effect on any subsequent reboot. The configured boot order remains until the configuration is changed again in Cisco IMC or in the BIOS setup.

Note The actual boot order differs from the configured boot order if either of the following conditions occur:

- BIOS encounters issues while trying to boot using the configured boot order.
- A user changes the boot order directly through BIOS.
- BIOS appends devices that are seen by the host but are not configured from the user.

Note When you create a new policy using the configure boot order feature, BIOS tries to map this new policy to the devices in the system. It displays the actual device name and the policy name to which it is mapped in the **Actual Boot Order** area. If BIOS cannot map any device to a particular policy in Cisco IMC, the actual device name is stated as **NonPolicyTarget** in the **Actual Boot Order** area.

Note When you upgrade Cisco IMC to the latest version 2.0(x) for the first time, the legacy boot order is migrated to the precision boot order. During this process, previous boot order configuration is erased and all device types configured before updating to 2.0 version are converted to corresponding precision boot device types and some dummy devices are created for the same device types. you can view these devices in the **Configured Boot Order** area in the web UI. To view these devices in the CLI, enter **show boot-device** command. During this the server's actual boot order is retained and it can be viewed under actual boot order option in web UI and CLI.

When you downgrade Cisco IMC prior to 2.0(x) verison the server's last legacy boot order is retained, and the same can be viewed under **Actual Boot Order** area. For example:

- If you configured the server in a legacy boot order in 2.0(x) version, upon downgrade a legacy boot order configuration is retained.
- If you configured the server in a precision boot order in 2.0(x), upon downgrade the last configured legacy boot order is retained.

Important

- Boot order configuration prior to 2.0(x) is referred as legacy boot order. If your running version is 2.0(x), then you cannot configure legacy boot order through web UI, but you can configure through CLI and XML API. In the CLI, you can configure it by using **set boot-order HDD,PXE** command. Even though, you can configure legacy boot order through CLI or XML API, in the web UI this configured boot order is not displayed.
- Legacy and precision boot order features are mutually exclusive. You can configure either legacy or precision boot order. If you configure legacy boot order, it disables all the precision boot devices configured. If you configure precision boot order, then it erases legacy boot order configuration.

Configuring the Precision Boot Order

Before you begin

You must log in as a user with admin privileges to configure server the boot order.

Procedure

Step 1 In the **Navigation** pane, click the **Compute** menu.

Step 2 In the **BIOS** tab, click the **Configure Boot Order** tab.

Step 3 In the **BIOS Properties** area, click **Configure Boot Order**.

A dialog box with boot order instructions appears.

Step 4 In the **Configure Boot Order** dialog box, update the following properties:

Name	Description
Add Boot Device table	The server boot options. You can add one or more of the following boot device and set parameters of the selected device: **Note** The following list shows all possible boot devices. The actual devices displayed depend on the type of C-Series server that you are using. • **Add Local HDD** • **Add PXE Boot** • **Add SAN Boot** • **Add iSCSI Boot** • **Add SD Card** **Note** This option is available only on some UCS C-Series servers. • **Add USB** • **Add Virtual Media** • **Add PCH Storage** • **Add UEFI SHELL** • **Add NVME** • **Add Local CDD**
Enable/Disable button	The visibility of a device by BIOS. The state can be one of the following: • **Enabled**— The device is visible to BIOS in a boot order configuration. • **Disabled**— The device is not visible to BIOS in a boot order configuration.
Modify button	Modifies the attributes of the selected devices.
Delete button	Deletes the selected bootable device from the **Boot Order** table.
Clone button	Copies an existing device setting to a new device.
Re-Apply button	Reapplies the boot order configuration to BIOS when the last configured boot order source displays as BIOS.
Move Up button	Moves the selected device type to a higher priority in the **Boot Order** table.

Name	Description
Move Down button	Moves the selected device type to a lower priority in the **Boot Order** table.
Boot Order table	Displays the device types from which this server can boot, in the order in which the boot is attempted.
Save Changes button	Saves the changes to the configured boot order or reapplies a previously configured boot order. Cisco IMC sends the configured boot order to BIOS the next time that server is rebooted.
Reset Values button	Resets the values of the configured boot order.
Close button	Closes the dialog box without saving any changes or reapplying the existing configuration. If you choose this option, the actual boot order does not change the next time that server is rebooted.

Step 5 Click **Save Changes**.

Additional device types might be appended to the actual boot order, depending on what devices you have connected to your server.

What to do next

Reboot the server to boot with your new boot order.

Managing a Boot Device

Before you begin

You must log in as a user with admin privileges to add device type to the server boot order.

Procedure

Step 1 In the **Navigation** pane, click the **Compute** menu.

Step 2 In the **BIOS** tab, click the **Configure Boot Order** tab.

Step 3 In the **BIOS Properties** area, click **Configure Boot Order**.

A dialog box with boot order instructions appears.

Step 4 In the **Configure Boot Order** dialog box, from the **Add Boot Device** table, choose the device that you want add to the boot order.

To add the local HDD device, click **Add Local HDD**, and update the following parameters:

Name	Description
Name field	The name of the device. **Note** Once created, you cannot rename the device.
State drop-down list	The visibility of the device by BIOS. This can be one of the following: • **Enabled**—The device is visible to BIOS in a boot order configuration. • **Disabled**—The device is not visible to BIOS in a boot configuration.
Order field	The order of the device in the available list of devices. Enter between 1 and n, where n is the number of devices.
Slot field	The slot in which the device is installed. Enter the slot number from the available range.
Add Device button	Adds the device to the **Boot Order** table.
Cancel button	Closes the dialog box without saving any changes made while the dialog box was open.

To add the PXE device, click **Add PXE**, and update the following parameters:

Name	Description
Name field	The name of the device. This name cannot be changed after the device has been created.
State drop-down list	The visibility of the device by BIOS. The state can be one of the following: • **Enabled**—The device is visible to BIOS in a boot order configuration. • **Disabled**—The device is not visible to BIOS in a boot order configuration.
Order field	The order of the device in the available list of devices. Enter between 1 and n, where n is the number of devices.
MAC Address	MAC address of the server. **Note** This option is available only on some C-Series servers.
Slot field	The slot in which the device is installed. Enter the slot number from the available range.
Port field	The port of the slot in which the device is present. Enter a number between 0 and 255.

To add the SAN boot device, click **Add SAN Boot**, and update the following parameters:

Name	Description
Name field	The name of the device. This name cannot be changed after the device has been created.
State drop-down list	The visibility of the device by BIOS. The state can be one of the following: • **Enabled**—The device is visible to BIOS in a boot order configuration. • **Disabled**—The device is not visible to BIOS in a boot order configuration.
Order field	The order of the device in the available list of devices. Enter between 1 and n, where n is the number of devices.
Slot field	The slot in which the device is installed. Enter the slot number from the available range.
LUN field	Logical unit in a slot where the device is present. Enter a number between 0 and 255.
Save Changes button	Adds the device to the **Boot Order** table, and saves the changes.
Cancel button	Closes the dialog box without saving any changes made while the dialog box was open.

To add the iSCSI boot device, click **Add iSCSI Boot**, and update the following parameters:

Name	Description
Name field	The name of the device. This name cannot be changed after the device has been created.
State drop-down list	The visibility of the device by BIOS. The state can be one of the following: • **Enabled**—The device is visible to BIOS in a boot order configuration. • **Disabled**—The device is not visible to BIOS in a boot order configuration.
Order field	The order of the device in the available list of devices. Enter between 1 and n, where n is the number of devices.
Slot field	The slot in which the device is installed. Enter the slot number from the available range.

Name	Description
Port field	The port of the slot in which the device is present. Enter a number between 0 and 255. **Note** In case of a VIC card, use a vNIC instance instead of the port number.
Save Changes button	Adds the device to the **Boot Order** table, and saves the changes.
Cancel button	Closes the dialog box without saving any changes made while the dialog box was open.

To add the SD card, click **Add SD Card**, and update the following parameters:

Note This option is available only on some UCS C-Series servers.

Name	Description
Name field	The name of the device. This name cannot be changed after the device has been created.
State drop-down list	The visibility of the device by BIOS. This can be one of the following: • **Enabled**—The device is visible to BIOS in a boot order configuration. • **Disabled**—The device is not visible to BIOS in a boot configuration.
Order field	The order of the device in the available list of devices. Enter between 1 and n, where n is the number of devices.
Save Changes button	Adds the device to the **Boot Order** table.
Cancel button	Closes the dialog box without saving any changes made while the dialog box was open.

To add the USB device, click **Add USB**, and update the following parameters:

Name	Description
Name field	The name of the device. This name cannot be changed after the device has been created.
Sub Type drop-down list	The subdevice type under a certain device type. This can be one of the following: • **CD** • **FDD** • **HDD**

Name	Description
State drop-down list	The visibility of the device by BIOS. This can be one of the following: • **Enabled**—The device is visible to BIOS in a boot order configuration. • **Disabled**—The device is not visible to BIOS in a boot order configuration.
Order field	The order of the device in the available list of devices. Enter between 1 and n, where n is the number of devices.
Save Changes button	Adds the device to the **Boot Order** table.
Cancel button	Closes the dialog box without saving any changes made while the dialog box was open.

To add the virtual media, click **Virtual Media**, and update the following parameters:

Name	Description
Name field	The name of the device. This name cannot be changed after the device has been created.
Sub Type drop-down list	The subdevice type under a certain device type. This could be any one of the following: • **KVM Mapped DVD** • **Cisco IMC Mapped DVD** • **KVM Mapped HDD** • **Cisco IMC Mapped HDD** • **KVM Mapped FDD**
State drop-down list	The visibility of the device by BIOS. The state can be one of the following: • **Enabled**—The device is visible to BIOS in a boot order configuration. • **Disabled**—The device is not visible to BIOS in a boot order configuration.
Order field	The order of the device in the available list of devices. Enter between 1 and n, where n is the number of devices.
Save Changes button	Adds the device to the **Boot Order** table.
Cancel button	Closes the dialog box without saving any changes made while the dialog box was open.

To add the PCH storage device, click **PCH Storage**, and update the following parameters:

Name	Description
Name field	The name of the device. This name cannot be changed after the device has been created.
State drop-down list	The visibility of the device by BIOS. This can be one of the following: • **Enabled**—The device is visible to BIOS in a boot order configuration. • **Disabled**—The device is not visible to BIOS in a boot order configuration.
Order field	The order of the device in the available list of devices. Enter between 1 and n, where n is the number of devices.
LUN field	Logical unit in a slot where the device is present. • Enter a number between 0 and 255 • SATA in AHCI mode—Enter a value between 1 and 10 • SATA in SWRAID mode—Enter 0 for SATA , and enter 1 for SATA **Note** SATA mode is available only on some UCS C-Series servers.
Save Changes button	Adds the device to the **Boot Order** table.
Cancel button	Closes the dialog box without saving any changes made while the dialog box was open.

To add the UEFI shell device, click **Add UEFI Shell**, and update the following parameters:

Name	Description
Name field	The name of the device. This name cannot be changed after the device has been created.
State drop-down list	The visibility of the device by BIOS. The state can be one of the following: • **Enabled**—The device is visible to BIOS in a boot order configuration. • **Disabled**—The device is not visible to BIOS in a boot order configuration.
Order field	The order of the device in the available list of devices. Enter between 1 and n, where n is the number of devices.
Add Device button	Adds the device to the **Boot Order** table.

Name	Description
Cancel button	Closes the dialog box without saving any changes made while the dialog box was open.

Overview to UEFI Secure Boot

You can use Unified Extensible Firmware Interface (UEFI) secure boot to ensure that all the EFI drivers, EFI applications, option ROM or operating systems prior to loading and execution are signed and verified for authenticity and integrity, before you load and execute the operating system. You can enable this option using either web UI or CLI. When you enable UEFI secure boot mode, the boot mode is set to UEFI mode and you cannot modify the configured boot mode until the UEFI boot mode is disabled.

Note If you enable UEFI secure boot on a nonsupported OS, on the next reboot, you cannot boot from that particular OS. If you try to boot from the previous OS, an error is reported and recorded the under system software event in the web UI. You must disable the UEFI secure boot option using Cisco IMC to boot from your previous OS.

Important Also, if you use an unsupported adapter, an error log event in Cisco IMC SEL is recorded. The error messages is displayed that says:

System Software event: Post sensor, System Firmware error. EFI Load Image Security Violation. [0x5302] was asserted .

UEFI secure boot is supported on the following components:

Components	Types
Supported OS	• Windows Server 2012 • Windows Server 2012 R2
Broadcom PCI adapters	• 5709 dual and quad port adapters • 57712 10GBASE-T adapter • 57810 CNA • 57712 SFP port
Intel PCI adapters	• i350 quad port adapter • X520 adapter • X540 adapter • LOM

Components	Types
QLogic PCI adapters	• 8362 dual port adapter • 2672 dual port adapter
Fusion-io	
LSI	• LSI MegaRAID SAS 9240-8i • LSI MegaRAID SAS 9220-8i • LSI MegaRAID SAS 9265CV-8i • LSI MegaRAID SAS 9285CV-8e • LSI MegaRAID SAS 9285CV-8e • LSI MegaRAID SAS 9266-8i • LSI SAS2008-8i mezz • LSI Nytro card • RAID controller for UCS Storage (SLOT-MEZZ) • Host Bus Adapter (HBA)

Enabling UEFI Secure Boot

Procedure

Step 1 In the **Navigation** pane, click the **Compute** menu.

Step 2 In the work pane, click the **BIOS** tab.

Step 3 In the **BIOS Properties** area of the **Configure Boot Order** tab, check **UEFI Secure Boot** checkbox.

Note If checked, the boot mode is set to UEFI secure boot. You cannot modify the **Configure Boot Mode** until UEFI secure boot option is disabled.

If you enable UEFI secure boot on a nonsupported OS, on the next reboot, you cannot boot from that particular OS. If you try to boot from the previous OS, an error is reported and recorded under the system software event in the web UI. You must disable the UEFI secure boot option by using Cisco IMC to boot from your previous OS.

Step 4 Click **Save Changes**.

What to do next

Reboot the server to have your configuration boot mode settings take place.

Disabling UEFI Secure Boot

Procedure

Step 1 In the **Navigation** pane, click the **Compute** menu.

Step 2 In the work pane, click the **BIOS** tab.

Step 3 In the **BIOS Properties** area, uncheck the **UEFI Secure Boot** check box.

Step 4 Click **Save Changes**.

What to do next

Reboot the server to have your configuration boot mode settings take place.

Viewing the Actual Server Boot Order

The actual server boot order is the boot order actually used by BIOS when the server last booted. The actual boot order can differ from the boot order configured in Cisco IMC.

Procedure

Step 1 In the **Navigation** pane, click the **Compute** menu.

Step 2 In the **BIOS** tab, click the **Configure Boot Order** tab.

Step 3 In the **BIOS Properties** area, click **Configure Boot Order**.

This area displays the boot order devices configured through Cisco IMC as well as the actual boot order used by the server BIOS.

The **Configured Boot Devices** section displays the boot order (**Basic** or **Advanced**) configured through Cisco IMC. If this configuration changes, Cisco IMC sends this boot order to BIOS the next time that server boots. The Basic configuration allows you to specify only the device type. The Advanced configuration allows you to configure the device with specific parameters such as slot, port and LUN.

To change the configured boot order, or to restore the previously configured boot order, administrators can click the **Configure Boot Order** button. To have these changes take effect immediately, reboot the server. You can verify the new boot order by refreshing the **BIOS** tab.

Note This information is only sent to BIOS the next time the server boots. Cisco IMC does not send the boot order information to BIOS again until the configuration changes.

The **Actual Boot Devices** section displays the boot order actually used by BIOS when the server last booted. The actual boot order will differ from the configured boot order if either of the following conditions occur:

- The BIOS encounters issues while trying to boot using the configured boot order.
- A user changes the boot order directly through the BIOS. To override any manual changes, you can change the configured boot order through Cisco IMC and reboot the server.

Note When you create a new policy using the configured boot order, BIOS tries to map this new policy to the device or devices present in the system. It displays the actual device name and the policy name to which it is mapped under the **Actual Boot Order** area. If BIOS cannot map any device found to a particular policy in Cisco IMC, then the actual device name is stated as **NonPolicyTarget** under the **Actual Boot Order** area.

Configuring a Server to Boot With a One-Time Boot Device

You can configure a server to boot from a particular device only for the next server boot, without disrupting the currently configured boot order. Once the server boots from the one time boot device, all its future reboots occur from the previously configured boot order.

Before you begin

You must log in as a user with admin privileges to configure server the boot order.

Procedure

Step 1 In the **Navigation** pane, click the **Compute** menu.

Step 2 In the **BIOS** tab, click the **Configure Boot Order** tab.

Step 3 In the **BIOS Properties** area, select an option from the **Configured One Time Boot Device** drop-down.

Note The host boots to the one time boot device even when configured with a disabled advanced boot device.

Creating a Server Asset Tag

Before you begin

You must log in with user or admin privileges to perform this task.

Procedure

Step 1 In the **Navigation** pane, click the **Chassis** menu.

Step 2 In the **Chassis** menu, click **Summary**.

Step 3 In the **Server Properties** area, update the **Asset Tag** field.

Step 4 Click **Save Changes**.

Configuring Power Policies

Power Capping

Important This section is valid only for some UCS C-Series servers.

Power capping determines how server power consumption is actively managed. When you enable power capping option, the system monitors power consumption and maintains the power below the allocated power limit. If the server cannot maintain the power limit or cannot bring the platform power back to the specified power limit within the correction time, power capping performs actions that you specify in the **Action** field under the **Power Profile** area.

Once power capping is enabled, you can configure multiple power profiles to either have standard or advanced power profiles with defined attributes. If you choose a standard power profile, you can set the power limit, correction time, corrective-action, suspend period, hard capping, and policy state (if enabled). If you choose an advanced power profile, in addition to the attributes of the standard power profile, you can also set the domain specific power limits, safe throttle level, and ambient temperature based power capping attributes.

Note The following changes are applicable for Cisco UCS C-Series release 2.0(13) and later:

- After upgrading to the 2.0(13) release, power characterization automatically runs during the first host power on. Subsequent characterization runs only if initiated as described in section **Run Power Characterization** section.
- Also, when a server is power cycled and there is a change to the CPU or DIMM configurations, power characterization automatically runs on first host boot. For any other hardware change like PCIe adapters, GPU or HDDs, power characterization does not run. The characterized power range is modified depending on the components present after the host power cycle.

The **Run Power Characterization** option in the **Power Cap Configuration** Tab of the Web UI power cycles the host and starts power characterization.

Setting Power Redundancy Policy

Procedure

Step 1 In the **Navigation** pane, click the **Chassis** menu.

Step 2 In the **Chassis** menu, click **Sensors**.

Step 3 In the **Sensors** working area, click the **Power Supply** tab.

Step 4 Review the following sensor properties for power supply:

Properties Area

Name	Description
Redundancy Status field	The power supply redundancy status.
Redundancy Policy field	The power supply redundancy policy. This can be one of the following: • **Non-Redundant** - N, the available PSU output capacity, equals the number of PSUs installed, where PSU failure or grid failure is not supported. • **N+1** - N, the available PSU output capacity, equals the number of PSUs installed minus 1 (N-1), where the single PSU failure is supported, but grid failure is not supported. • **Grid** - N, the available PSU output capacity, equals half the number of PSUs installed (N/2), where N PSU failure or grid failure is supported. This policy implies that the you have connected N number of PSUs to one feed and the other N number of PSUs to another feed.

Enabling Power Characterization

You can enable power characterization only on some Cisco UCS C-Series servers.

Before you begin

You must log in with admin privileges to perform this task.

Procedure

Step 1 In the **Navigation** pane, click the **Chassis** menu.

Step 2 In the **Chassis** menu, click **Power Management**.

Step 3 In the **Power Cap Configuration** tab, click the **Run Power Characterization** link.

A confirmation box appears that says the host is going to be either powered on or rebooted depending on the current power state. Review the message and click **OK** to close the dialog box.

You can verify the progress of the power characterization in the **Status** field. The status can be one of the following:

- **Not Run**—When power characterization has not been run at all since the factory reset.
- **Running**—When a power characterization process is in progress.
- **Completed Successfully**—When a power characterization has run successfully.
- **Using Defaults**—After running the power characterization, if the system fails to obtain the valid values, it uses default value as the recommended maximum and minimum power for power capping.

  After power characterization action is performed, the platform power limit range is populated under the **Recommended Power Cap** area as a minimum and maximum power in watts.

Three values for power capping limits are displayed: **Minimum (Allow Throttling)**, **Minimum (Efficient)** and **Maximum**:

- **Minimum (Allow Throttling)** - This is the lower power limit for the chassis, when the CPU throttling is enabled.

  Note You can use this minimum power limit value only when the **Allow Throttle** checkbox is enabled.

- **Minimum (Efficient)** - This is the lower power limit for the chassis, when the CPU throttling is disabled.
- **Maximum** - This is the upper power limit for the chassis.

Enabling Power Capping

This option is available only on some Cisco UCS C-Series servers.

Before you begin

- You must log in with admin privileges to perform this task.
- Run power characterization.

Procedure

Step 1 In the **Navigation** pane, click the **Chassis** menu.

Step 2 In the **Chassis** menu, click **Power Management**.

Step 3 Check the **Power Capping** check box.

Note This is the global option to enable or disable power capping. You must enable this option if you want to configure power profile settings.

Step 4 Click **Save Changes**.

Power Profiles

You can configure multiple profiles and set the attributes. These profiles are configured by using either the web UI or CLI. In the web UI, the profiles are listed under the **Power Capping** area. In the CLI, the profiles are configured when you enter the **power-cap-config** command. You can configure the following power profiles for power capping feature:

- **Standard**—Enables you to set a power limit for the platform domain.
- **Advanced**—Enables you to set various attributes such as the power limiting policy, fail-safe power limiting policy, and the ambient temperature-based power limiting policy.

Configuring Standard Power Profiles Settings

This option is available only on some Cisco UCS C-Series servers.

Before you begin

- You must enable power capping.
- You must log in with admin privileges to perform this task.

Procedure

Step 1 In the **Navigation** pane, click the **Chassis** menu.

Step 2 In the **Chassis** menu, click **Power Management**.

Step 3 In the **Power Profiles** area, complete the following fields:

Name	Description
Name field	The name of the profile selected to set the attributes for power capping.
Enable Profile check box	Enables the power profile for editing.
Allow Throttle check box	If checked, it forces the processor to use more aggressive power management mechanisms such as, CPU the throttling states (T-states) and memory bandwidth throttling to maintain the power limit, in addition to the regular internal mechanisms.
Correction Time field	The time in seconds in which the platform power should be brought back to the specified power limit before taking the action specified in the **Action** field. The range is from 1 and 600. This range varies depending on the server PSU value. **Note** The supported minimum correction time for all PSU models is 1 second, except for DPST-1400AB and DPST-1200DB PSU models for which the supported minimum correction time is 3 seconds.
Action drop-down list	The action to be performed if the specified power limit is not maintained within the correction time. • **Alert**—Logs the event to the Cisco IMC SEL. • **Alert and Shutdown**—Logs the event to the Cisco IMC SEL, and gracefully shuts down the host.

Name	Description
Power Limit check box	The power limit for the server. Enter power in watts within the range specified.
Set Hard Cap check box	If checked, ensure that no platform consumption occurs beyond the set power capping value. The platform power consumption is maintained at a safe offset margin below the configured power cap value.

Step 4 Click **Save Changes**.

Configuring Advanced Power Profile Settings

This option is available only on some Cisco UCS C-Series servers

Before you begin

- You must enable power capping.
- You must log in with admin privileges to perform this task.

Procedure

Step 1 In the **Navigation** pane, click the **Chassis** menu.

Step 2 In the **Chassis** menu, click **Power Management**.

Step 3 From the **Power Profiles** table in the **Power Cap Configuration** tab, choose the **Advanced** profile.
In addition to the standard profile settings, the **Domain Specific Power Limit**, **Safe Throttle Level**, and **Ambient Temperature Based Power Capping** areas are displayed.

Step 4 In the **Domain Specific Power Limit** area, complete the following fields:

Name	Description
CPU field	The power limit for the CPU. Enter power in watts within the range specified.
Memory field	The power limit for the memory. Enter power in watts within the range specified.
Platform field	The power limit for the platform. Enter power in watts within the range specified.

Step 5 In the **Suspend Period** area, click **Configure** to configure a suspend period for a specific time period and day.

Step 6 In the **Safe Throttle Level** area, complete the following fields:

Name	Description
Failsafe Timeout field	The safe throttle policy that is applied when power capping is impacted due to internal faults such as missing power readings for platforms or CPUs. Enter value in seconds
Platform field	The throttling level for the platform. The range is from 0 to 100 percentage.

Step 7 In the **Ambient Temperature Based Power Capping** area, complete the following fields:

Name	Description
Platform Temp Trigger field	The inlet (front panel) temperature sensor value in Celsius. **Note** When the inlet temperature on the platform exceeds the specified limit, the system uses the thermal power value as the power capping limit.
Thermal Power Limit field	The power limit to be maintained in watts.

Step 8 Click **Save Changes**.

Resetting Power Profiles to Default

This option is available only on some Cisco UCS C-Series servers.

Before you begin

You must log in with admin privileges to perform this task.

Procedure

Step 1 In the **Navigation** pane, click the **Chassis** menu.

Step 2 In the **Chassis** menu, click **Power Management**.

Step 3 In the **Power Profiles** area, click the **Reset Profiles to Default** button.

Note This action resets all the power profile settings to factory default values and disables power capping.

Step 4 Click **Save Changes**.

Power Monitoring

Power monitoring is initiated from the time the host is either powered on or booted. This feature collects the power consumption statistics for a platform, CPU, and memory domains and provides a minimum, maximum, and averaged reading for the duration that is being collected. These readings can be used to calculate the power consumption trends of the domains. Cisco IMC collects and stores these power consumption statistic values to plot graphs for various time periods (such as an hour, a day, and a week).

Note You cannot create additional statistics collection policies or delete the existing monitoring policies. You can only modify the default policies.

Viewing Power Monitoring Summary

This option is available only on some Cisco UCS C-Series servers.

Procedure

Step 1 In the **Navigation** pane, click the **Chassis** menu.

Step 2 In the **Chassis** menu, click **Power Management**.

Step 3 On the **Work** pane, click the **Power Monitoring** tab.

Step 4 In the **Power Monitoring Summary** area, review the following information:

The following tables display the power consumed by the system and its components since the last time it was rebooted.

Name	Description
Monitoring Period	The time of monitoring the power consumed by the system since the last time it was rebooted. The monitoring period is displayed in Day HH:MM:SS format.

Step 5 In the **Platform** area, review the following information:

Name	Description
Current	The power currently being used by the server, CPU, and memory in watts.
Minimum	The minimum number of watts consumed by the server, CPU, and memory since the last time it was rebooted.
Maximum	The maximum number of watts consumed by the server, CPU, and memory since the last time it was rebooted.
Average	The average amount of power consumed by the server, CPU, and memory in watts over the defined period of time.

Step 6 In the **CPU** area, review the following information:

Name	Description
Current	The power currently being used by the CPU in watts.
Minimum	The minimum number of watts consumed by the CPU since the last time it was rebooted.
Maximum	The maximum number of watts consumed by the CPU since the last time it was rebooted.
Average	The average amount of power consumed by the server, CPU, and memory in watts over the defined period of time.

Step 7 In the **Memory** area, review the following information:

Name	Description
Current	The power currently being used by the memory, in watts.
Minimum	The minimum number of watts consumed by the memory since the last time it was rebooted.
Maximum	The maximum number of watts consumed by the memory since the last time it was rebooted.
Average	The average amount of power consumed by the memory in watts over the defined period of time.

Step 8 In the **Chart Properties** area, review and update the chart, component, and view the power consumption details.

Name	Description
Chart Settings	Enables you to configure the chart properties and the way data is displayed in the chart.
Download Power Statistics and Server Utilization Data	Enables you to download the power statistics and host server utilization information. The files are downloaded to your local download folder. **Note** If the file size of the already downloaded statistics file is less than 256 KB, then when you download, another set of files is downloaded, one for the power statistics and the other for host server utilization. If the size of the existing files exceeds 256 KB, then the next set of files overwrites the existing ones.

Name	Description
Chart drop-down list	Allows you to collect the trends of power consumption from every server for the selected duration. This can be one of the following: • **Last One Hour**— Plots the chart for every five minutes • **Last One Day**—Plots the chart for every hour from the current time. • **Last One Week**—Plots the chart for each day.
Component drop-down list	The component for which you want to view the power consumption over the selected duration. This can be one of the following: • **Platform** • **CPU** • **Memory** • **All**
Plot button	Displays the power consumed by the selected component for the specified duration.
Chart/Table View (Appears on mouse-over)	Select to view power monitoring summary in either **Chart** or **Table** view.
Chart Type (Appears on mouse-over)	Select the type of chart you wish to view. This could be one of the following: • Line Chart— Power monitoring data appears in lines. • Column Chart— Power monitoring data appears as a column.
Current check box	If checked, the chart displays the current power consumed by the selected component for the selected duration.
Average check box	If checked, the plot displays the average amount of power consumed by the selected component for the selected duration.
Maximum check box	If checked, the plot displays the maximum number of watts consumed by the selected component for the selected duration.

Name	Description
Minimum check box	If checked, the plot displays the minimum number of watts consumed by the selected component for the selected duration.

Viewing the Power Statistics in a Chart

This option is available only on some Cisco UCS C-Series servers.

Before you begin

- You must enabled power capping.
- You must log in with admin privileges to perform this task.

Procedure

Step 1 In the **Navigation** pane, click the **Chassis** menu.

Step 2 In the **Chassis** menu, click **Power Management**.

Step 3 In the **work** pane, click the **Power Monitoring** tab.

Step 4 On the **Power Monitoring** tab, review and update the chart, component, to view the power consumption details.

Name	Description
Chart drop-down list	Allows you to collect the trends of power consumption from every server for the selected duration. This can be one of the following: • **Last One Hour**— Plots the chart for every five minutes • **Last One Day**—Plots the chart for every hour from the current time. • **Last One Week**—Plots the chart for each day.
Component drop-down list	The component for which you want to view the power consumption over the selected duration. This can be one of the following: • **Platform** • **CPU** • **Memory** • **All**

Name	Description
Maximum check box	If checked, the plot displays the maximum number of watts consumed by the selected component for the selected duration.
Minimum check box	If checked, the plot displays the minimum number of watts consumed by the selected component for the selected duration.
Average check box	If checked, the plot displays the average amount of power consumed by the selected component for the selected duration.
Current check box	If checked, the chart displays the current power consumed by the selected component for the selected duration.
Plot button	Displays the power consumed by the selected component for the specified duration.

The power reading chart plots power consumption values of different components for the selected duration. These power consumption values are captured from the time that the host is powered on. When a power profile is enabled, the power limit is plotted in the chart as a red line. This plot can be used to determine the power consumption trend of the system. To view the configured power limit values of a particular domain, move the mouse over these trend lines.

If choose the Standard profile, the trend line represent the power limit. If you choose the Advance profile, it represents the power limit for CPU, memory, and platform depending on your power profile configuration.

Note These trend lines are not displayed if the profile is disabled on the **Power Cap Configuration** tab.

Step 5 Click **Save Changes**.

Downloading Power Statistics and Server Utilization Data

This option is available only on some Cisco UCS C-Series servers.

Before you begin

You must log in with admin privileges to perform this task.

Procedure

Step 1 In the **Navigation** pane, click the **Chassis** menu.

Step 2 In the **Chassis** menu, click **Power Management**.

Step 3 In the **Work** pane, click the **Power Monitoring** tab.

Step 4 In the **Power Monitoring** tab, click **Download Power Statistics and Server Utilization Data**

The files are downloaded to your local download folder.

Note If the file size of the already downloaded statistics file is less than 256 KB, then when you download, another set of files is downloaded, one for the power statistics and the other for host server utilization. If the size of the existing files exceeds 256 KB, then the next set of files overwrites the existing ones.

Configuring the Power Restore Policy

The power restore policy determines how power is restored to the server after a chassis power loss.

Before you begin

You must log in with admin privileges to perform this task.

Procedure

Step 1 In the **Navigation** pane, click the **Compute** menu.

Step 2 In the work pane, click the **Power Policies** tab.

Step 3 In the **Power Restore Policy** area, update the following fields:

Name	Description
Power Restore Policy drop-down list	The action to be taken when chassis power is restored after an unexpected power loss. This can be one of the following: • **Power Off**—The server remains off until it is manually restarted. • **Power On**—The server is allowed to boot up normally when power is restored. The server can restart immediately or, optionally, after a fixed or random delay. • **Restore Last State**—The server restarts and the system attempts to restore any processes that were running before power was lost.

Step 4 Click **Save Changes**.

Configuring the Fan Policy

You can determine the right fan policy based on the server configuration and server components.

Before you begin

You must log in with admin privileges to perform this task.

Procedure

Step 1 In the **Navigation** pane, click the **Compute** menu.

Step 2 In the work pane, click the **Power Policies** tab.

Step 3 In the **Configured Fan Policy** area, select a fan policy from the drop-down list. It can be one of the following:

Name	Description
Fan Policy drop-down list	This can be one of the following: • **Balanced**—This setting can cool almost any server configuration, but may not be suitable for servers with PCIe cards as these cards overheat easily. • **Performance**—This setting can be used for server configurations where maximum fan speed is required for high performance. With this setting, the fan speeds run at the same speed or higher speed than that of the fan speed set with the Balanced fan policy. **Note** This option is available only on some C-Series servers. • **Low Power**—This is the default policy. This setting is ideal for minimal configuration servers that do not contain any PCIe cards. • **High Power**—This setting can be used for server configurations that require fan speeds ranging from 60% to 85%. This policy is ideal for servers that contain PCIe cards that overheat easily and have high temperatures. • **Maximum Power**—This setting can be used for server configurations that required extremely high fan speeds ranging from 70% to 100%. This policy is ideal for servers that contain PCIe cards that overheat easily and have very high temperatures. • **Acoustic**—This setting can be used for configuring the fan noise level, thereby enabling noise reduction in the servers. Application of this policy might result in performance throttling impacting system performance. If excessive thermal or performance events are recorded in the event logs, select a standard fan ontrol policy like **Low Power**, which is a non-disruptive change. **Note** This option is available only on UCS C240 M5 servers.

Name	Description
Applied Fan Policy field	The actual speed of the fan that runs on the server. When the configured fan policy is not in effect, it displays N/A. The configured fan policy takes effect when the server is powered on and the POST is complete.

Configuration Status field	The configuration status of the fan policy. This can be one of the following:
	• SUCCESS —The fan speed set by you matches the actual fan speed that runs on the server.
	• PENDING —The configured fan policy is not in effect yet. This can be due to one of the following:
	  • The server is powered off
	  • The BIOS POST is not complete
	• FAN POLICY OVERRIDE—Overrides the specified fan speed with the actual speed determined by the configuration requirements of the server.

Step 4 Click **Save Changes**.

Configuring DIMM Blacklisting

DIMM Black Listing

In Cisco IMC, the state of the Dual In-line Memory Module (DIMM) is based on SEL event records. A DIMM is marked bad if the BIOS encounters a non-correctable memory error or correctable memory error with 16000 error counts during memory test execution during BIOS post. If a DIMM is marked bad, it is considered a non-functional device.

If you enable DIMM blacklisting, Cisco IMC monitors the memory test execution messages and blacklists any DIMM that encounters memory errors at any given point of time in the DIMM SPD data. This allows the host to map out those DIMMs.

DIMMs are mapped out or blacklisted only when Uncorrectable errors occur. When a DIMM gets blacklisted, other DIMMs in the same channel are ignored or disabled, which means that the DIMM is no longer considered bad.

Note DIMMs do not get mapped out or blacklisted for 16000 Correctable errors.

Enabling DIMM Black Listing

Before you begin

- You must be logged in as an administrator.

Procedure

Step 1 In the **Navigation** pane, click the **Chassis** menu.

Step 2 In the **Chassis** menu, click **Inventory**.

Step 3 In the **Inventory** pane, click the **Memory** tab.

Step 4 In the **Memory** pane's **DIMM Black Listing** area, click the **Enable DIMM Black List** check box.

Configuring BIOS Settings

Before you begin

You must log in with admin privileges to perform this task.

Procedure

Step 1 In the **Navigation** pane, click the **Compute** menu.

Step 2 In the Compute menu, click the **BIOS** tab.

Step 3 In the BIOS tab, click the **Configure BIOS** tab.

Step 4 Update the following tabs:

Table 1: BIOS Parameters in I/O Tab

Name	Description
Reboot Host Immediately checkbox	Upon checking, reboots the host server immediately. You must check the checkbox after saving changes.
Legacy USB Support drop-down list	Whether the system supports legacy USB devices. This can be one of the following: • **Disabled**—USB devices are only available to EFI applications. • **Enabled**—Legacy USB support is always available.

Name	Description
Intel VT for directed IO drop-down list	Whether the processor uses Intel Virtualization Technology (VT), which allows a platform to run multiple operating systems and applications in independent partitions. This can be one of the following: • **Disabled**—The processor does not permit virtualization. • **Enabled**—The processor allows multiple operating systems in independent partitions. **Note** If you change this option, you must power cycle the server before the setting takes effect.
Intel VTD coherency support drop-down list	Whether the processor supports Intel VT-d Coherency. This can be one of the following: • **Disabled**—The processor does not support coherency. • **Enabled**—The processor uses VT-d Coherency as required.
Intel VTD ATS support drop-down list	Whether the processor supports Intel VT-d Address Translation Services (ATS). This can be one of the following: • **Disabled**—The processor does not support ATS. • **Enabled**—The processor uses VT-d ATS as required.
All Onboard LOM Oprom drop-down list	Whether Option ROM is available on all LOM ports. This can be one of the following: • **Disabled**—Option ROM is disabled on all the ports. • **Enabled**—Option ROM is enabled on all the ports.
Onboard LOM Port0 Oprom drop-down list	Whether Option ROM is available on the LOM port 0. This can be one of the following: • **Disabled**—Option ROM is not available on LOM port 0. • **Enabled**—Option ROM is available on LOM port 0.
Onboard LOM Port1 Oprom drop-down list	Whether Option ROM is available on the LOM port 1. This can be one of the following: • **Disabled**—Option ROM is not available on LOM port 1. • **Enabled**—Option ROM is available on LOM port 1.
Pcie Slot*n* Oprom drop-down list	Whether the server can use the Option ROMs present in the PCIe card slot designated by *n*. This can be one of the following: • **Disabled**—Option ROM for slot *n* is not available. • **Enabled**—Option ROM for slot *n* is available.

Name	Description
MLOM Oprom drop-down list	This options allows you to control the Option ROM execution of the PCIe adapter connected to the MLOM slot. This can be one of the following: • **Disabled**—Does not execute Option ROM of the PCIe adapter connected to the MLOM slot. • **Enabled**—Executes Option ROM of the PCIe adapter connected to the MLOM slot.
HBA Oprom drop-down list	This options allows you to control the Option ROM execution of the PCIe adapter connected to the HBA slot. This can be one of the following: • **Disabled**—Does not execute Option ROM of the PCIe adapter connected to the HBA slot. • **Enabled**—Executes Option ROM of the PCIe adapter connected to the HBA slot.
Front NVME1 Oprom drop-down list	This options allows you to control the Option ROM execution of the PCIe adapter connected to the SSD:NVMe1 slot. This can be one of the following: • **Disabled**—Does not execute Option ROM of the PCIe adapter connected to the SSD:NVMe1 slot. • **Enabled**—Executes Option ROM of the PCIe adapter connected to the SSD:NVMe1 slot
Front NVME2 Oprom drop-down list	This options allows you to control the Option ROM execution of the PCIe adapter connected to the SSD:NVMe2 slot. This can be one of the following: • **Disabled**—Does not execute Option ROM of the PCIe adapter connected to the SSD:NVMe2 slot. • **Enabled**—Executes Option ROM of the PCIe adapter connected to the SSD:NVMe2 slot
HBA Link Speed drop-down list	This option allows you to restrict the maximum speed of an adapter card installed in PCIe HBA slot. This can be one of the following: • **Disabled**—The maximum speed is not restricted. • **Auto**—System selects the maximum speed allowed. • **GEN1**—2.5GT/s (gigatransfers per second) is the maximum speed allowed. • **GEN2**—5GT/s is the maximum speed allowed. • **GEN3**—8GT/s is the maximum speed allowed.

Name	Description
MLOM Link Speed drop-down list	This option allows you to restrict the maximum speed of an adapter card installed in PCIe MLOM slot. This can be one of the following: • **Disabled**—The maximum speed is not restricted. • **Auto**—System selects the maximum speed allowed. • **GEN1**—2.5GT/s (gigatransfers per second) is the maximum speed allowed. • **GEN2**—5GT/s is the maximum speed allowed. • **GEN3**—8GT/s is the maximum speed allowed.
PCIe Slot*n* Link Speed drop-down list	System IO Controller *n* (SIOCn) add-on slot (designated by *n*) link speed. This can be one of the following: • **Disabled**—Slot is disabled, and the card is not enumerated. • **Auto**— The default link speed. Link speed is automatically assigned. • **GEN1**—Link speed can reach up to first generation. • **GEN2**—Link speed can reach up to second generation. • **GEN3**—Link speed can reach up to third generation.
Front NVME1 Link Speed drop-down list	Link speed for NVMe front slot 1. This can be one of the following: • **Disabled**—Slot is disabled, and the card is not enumerated. • **Auto**—The default link speed. Link speed is automatically assigned. • **GEN1**—Link speed can reach up to first generation. • **GEN2**—Link speed can reach up to second generation. • **GEN3**—Link speed can reach up to third generation.
Front NVME2 Link Speed drop-down list	Link speed for NVMe front slot 2. This can be one of the following: • **Disabled**—Slot is disabled, and the card is not enumerated. • **Auto**—The default link speed. Link speed is automatically assigned. • **GEN1**—Link speed can reach up to first generation. • **GEN2**—Link speed can reach up to second generation. • **GEN3**—Link speed can reach up to third generation.

Name	Description
Rear NVME1 Link Speed drop-down list	Link speed for NVMe rear slot 1. This can be one of the following: • **Disabled**—Slot is disabled, and the card is not enumerated. • **Auto**—The default link speed. Link speed is automatically assigned. • **GEN1**—Link speed can reach up to first generation. • **GEN2**—Link speed can reach up to second generation. • **GEN3**—Link speed can reach up to third generation.
Rear NVME2 Link Speed drop-down list	Link speed for NVMe rear slot 2. This can be one of the following: • **Disabled**—Slot is disabled, and the card is not enumerated. • **Auto**—The default link speed. Link speed is automatically assigned. • **GEN1**—Link speed can reach up to first generation. • **GEN2**—Link speed can reach up to second generation. • **GEN3**—Link speed can reach up to third generation.
VGA Priority drop-down list	Allows you to set the priority for VGA graphics devices if multiple VGA devices are found in the system. This can be one of the following: • **OnBoard**—Priority is given to the onboard VGA device. BIOS post screen and OS boot are driven through the onboard VGA port. • **OffBoard**—Priority is given to the PCIE Graphics adapter. BIOS post screen and OS boot are driven through the external graphics adapter port. • **OnBoardDisabled**—Priority is given to the PCIe Graphics adapter, and the onboard VGA device is disabled. The vKVM does not function when the onboard VGA is disabled.
P-SATA OptionROM drop-down list	Allows you to select the PCH SATA optionROM mode. This can be one of the following: • **LSI SW Raid**— Sets both SATA and sSATA controllers to raid mode for LSI SW Raid. • **Disabled**— Disables both SATA and sSATA controllers.
M2.SATA OptionROM drop-down list	Mode of operation of Serial Advanced Technology Attachment (SATA) Solid State Drives (SSD). This can be one of the following: • **AHCI**— Sets both SATA and sSATA controllers to AHCI mode. • **LSI SW Raid**— Sets both SATA and sSATA controllers to raid mode for LSI SW Raid. • **Disabled**— Disables both SATA and sSATA controllers.

Name	Description
USB Port Rear drop-down list	Whether the rear panel USB devices are enabled or disabled. This can be one of the following • **Disabled**— Disables the rear panel USB ports. Devices connected to these ports are not detected by the BIOS and operating system. • **Enabled**— Enables the rear panel USB ports. Devices connected to these ports are detected by the BIOS and operating system.
USB Port Front drop-down list	Whether the front panel USB devices are enabled or disabled. This can be one of the following • **Disabled**— Disables the front panel USB ports. Devices connected to these ports are not detected by the BIOS and operating system. • **Enabled**— Enables the front panel USB ports. Devices connected to these ports are detected by the BIOS and operating system.
USB Port Internal drop-down list	Whether the internal USB devices are enabled or disabled. This can be one of the following • **Disabled**— Disables the internal USB ports. Devices connected to these ports are not detected by the BIOS and operating system. • **Enabled**— Enables the internal USB ports. Devices connected to these ports are detected by the BIOS and operating system.
USB Port KVM drop-down list	Whether the KVM ports are enabled or disabled. This can be one of the following • **Disabled**— Disables the KVM keyboard and/or mouse devices. Keyboard and/or mouse will not work in the KVM window. • **Enabled**— Enables the KVM keyboard and/or mouse devices.
USB Port SD Card drop-down list	Whether the SD card is enabled or disabled. This can be one of the following • **Disabled**— Disables the SD card ports. Devices connected to these ports are not detected by the BIOS and operating system. • **Enabled**— Enables the SD card ports. Devices connected to these ports are detected by the BIOS and operating system.
IPV6 PXE Support drop-down list	Enables or disables IPv6 support for PXE. This can be one of the following • **Disabled**—IPv6 PXE support is not available. • **Enabled**—IPv6 PXE support is always available.

Table 2: BIOS Parameters in Server Management Tab

Name	Description
Reboot Host Immediately checkbox	If the Reboot Host Immediately check box is checked, the server is rebooted immediately and the new BIOS settings go into effect. Otherwise the changes are saved until the server is manually rebooted.
OS Boot Watchdog Timer Policy drop-down list	What action the system takes if the watchdog timer expires. This can be one of the following: • **Power Off**—The server is powered off if the watchdog timer expires during OS boot. • **Reset**—The server is reset if the watchdog timer expires during OS boot. **Note** This option is only applicable if you enable the OS Boot Watchdog Timer.
OS Watchdog Timer drop-down list	Whether the BIOS programs the watchdog timer with a specified timeout value. This can be one of the following: • **Disabled**—The watchdog timer is not used to track how long the server takes to boot. • **Enabled**—The watchdog timer tracks how long the server takes to boot. If the server does not boot within the length of time specified in the **OS Boot Watchdog Timer Timeout** field, the Cisco IMC logs an error and takes the action specified in the **OS Boot Watchdog Policy** field.
OS Watchdog Timer Timeout drop-down list	If OS does not boot within the specified time, OS watchdog timer expires and system takes action according to timer policy. This can be one of the following: • **5 Minutes**—The OS watchdog timer expires 5 minutes after it begins to boot. • **10 Minutes**—The OS watchdog timer expires 10 minutes after it begins to boot. • **15 Minutes**—The OS watchdog timer expires 15 minutes after it begins to boot. • **20 Minutes**—The OS watchdog timer expires 20 minutes after it begins to boot. **Note** This option is only applicable if you enable the OS Boot Watchdog Timer.

Name	Description
Baud Rate drop-down list	What Baud rate is used for the serial port transmission speed. If you disable Console Redirection, this option is not available. This can be one of the following: • **9.6k**—A 9,600 Baud rate is used. • **19.2k**—A 19,200 Baud rate is used. • **38.4k**—A 38,400 Baud rate is used. • **57.6k**—A 57,600 Baud rate is used. • **115.2k**—A 115,200 Baud rate is used. This setting must match the setting on the remote terminal application.
Console Redirection drop-down list	Allows a serial port to be used for console redirection during POST and BIOS booting. After the OS has booted, console redirection is irrelevant. This can be one of the following: • **Serial Port A**—Enables console redirection on serial port A during POST. • **Serial Port B**—Enables console redirection on serial port B during POST. • **Disabled**—No console redirection occurs during POST.
CDN Control drop-down list	Whether the Ethernet Network naming convention is according to Consistent Device Naming (CDN) or the traditional way of naming conventions. This can be one of the following: • **Disabled**— CDN support for VIC cards is disabled • **Enabled**— CDN support is enabled for VIC cards.
FRB 2 Timer drop-down list	Whether the FRB2 timer is used by Cisco IMC to recover the system if it hangs during POST. This can be one of the following: • **Disabled**—The FRB2 timer is not used. • **Enabled**—The FRB2 timer is started during POST and used to recover the system if necessary.

Name	Description
Flow Control drop-down list	Whether a handshake protocol is used for flow control. Request to Send / Clear to Send (RTS/CTS) helps to reduce frame collisions that can be introduced by a hidden terminal problem. This can be one of the following: • **None**—No flow control is used. • **RTS/CTS**—RTS/CTS is used for flow control. **Note** This setting must match the setting on the remote terminal application.
Terminal type drop-down list	What type of character formatting is used for console redirection. This can be one of the following: • **PC-ANSI**—The PC-ANSI terminal font is used. • **VT100**—A supported VT100 video terminal and its character set are used. • **VT100-PLUS**—A supported VT100-plus video terminal and its character set are used. • **VT-UTF8**—A video terminal with the UTF-8 character set is used.

Table 3: BIOS Parameters in Security Tab

Name	Description
Reboot Host Immediately checkbox	**If the Reboot Host Immediately check box is checked, the server is rebooted immediately and the new BIOS settings go into effect. Otherwise the changes are saved until the server is manually rebooted.**
Trusted Platform Module Support drop-down list	Trusted Platform Module (TPM) is a microchip designed to provide basic security-related functions primarily involving encryption keys. This option allows you to control the TPM Security Device support for the system. It can be one of the following: • **Disabled**—The server does not use the TPM. • **Enabled**—The server uses the TPM. **Note** Contact your operating system vendor to make sure the operating system supports this feature.

Name	Description
Reboot Host Immediately checkbox	**If the Reboot Host Immediately check box is checked, the server is rebooted immediately and the new BIOS settings go into effect. Otherwise the changes are saved until the server is manually rebooted.**
Power on Password drop-down list	This token requires that you set a BIOS password before using the F2 BIOS configuration. If enabled, password needs to be validated before you access BIOS functions such as IO configuration, BIOS set up, and booting to an operating system using BIOS. It can be one of the following: • **Disabled**—Support is disabled. • **Enabled**—Support is enabled.

Table 4: BIOS Parameters in Processor Tab

Name	Description
Intel Virtualization Technology drop-down list	Whether the processor uses Intel Virtualization Technology (VT), which allows a platform to run multiple operating systems and applications in independent partitions. This can be one of the following: • **Disabled**—The processor does not permit virtualization. • **Enabled**—The processor allows multiple operating systems in independent partitions.
Extended Apic drop-down list	Allows you to enable or disable extended APIC support. This can be one of the following: • **Enabled**—Enables APIC support • **Disabled**—Disables APIC support.
Processor C1E drop-down list	Whether the CPU transitions to its minimum frequency when entering the C1 state. This can be one of the following: • **Disabled**—The CPU continues to run at its maximum frequency in C1 state. • **Enabled**—The CPU transitions to its minimum frequency. This option saves the maximum amount of power in C1 state. **Note** This option is available only on some C-Series servers.

Name	Description
Processor C6 Report drop-down list	Whether the BIOS sends the C6 report to the operating system. When the OS receives the report, it can transition the processor into the lower C6 power state to decrease energy usage while maintaining optimal processor performance. This can be one of the following: • **Disabled**—The BIOS does not send the C6 report. • **Enabled**—The BIOS sends the C6 report, allowing the OS to transition the processor to the C6 low power state. **Note** **CPUPowerManagement** must be set to **Custom** or the server ignores the setting for this parameter. **Note** This option is available only on some C-Series servers.
Execute Disable Bit drop-down list	Classifies memory areas on the server to specify where application code can execute. As a result of this classification, the processor disables code execution if a malicious worm attempts to insert code in the buffer. This setting helps to prevent damage, worm propagation, and certain classes of malicious buffer overflow attacks. This can be one of the following: • **Disabled**—The processor does not classify memory areas. • **Enabled**—The processor classifies memory areas. **Note** Contact your operating system vendor to make sure the operating system supports this feature.

Name	Description
Intel Turbo Boost Tech drop-down list	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: • **Disabled**—The processor does not increase its frequency automatically. • **Enabled**—The processor utilizes Turbo Boost Technology if required. **Note** **CPUPowerManagement** must be set to **Custom** or the server ignores the setting for this parameter.
Enhanced Intel SpeedStep Tech drop-down list	Whether the processor uses Enhanced Intel SpeedStep Technology, which allows the system to dynamically adjust processor voltage and core frequency. This technology can result in decreased average power consumption and decreased average heat production. This can be one of the following: • **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. We recommend that you contact your operating system vendor to make sure the operating system supports this feature. **Note** **CPUPowerManagement** must be set to **Custom** or the server ignores the setting for this parameter.
Intel HyperThreading Tech drop-down list	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: • **Disabled**—The processor does not permit hyperthreading. • **Enabled**—The processor allows for the parallel execution of multiple threads.

Name	Description
Workload Configuration drop-down list	This feature allows for workload optimization. The options are Balanced and I/O Sensitive: • **NUMA** • **UMA**
Core MultiProcessing drop-down list	Allows you to disable one or more of the physical cores on the server. This can be one of the following: • **All**—Enables all physical cores. This also enables Hyper Threading on the associated logical processor cores. • **1 through 28**—Specifies the number of physical processor cores that can run on the server. Each physical core has an associated logical core. **Note** Contact your operating system vendor to make sure the operating system supports this feature.
Sub NUMA Clustering drop-down list	Whether the CPU supports sub NUMA clustering, in which the tag directory and the memory channel are always in the same region. This can be one of the following: • **Disabled**— Sub NUMA clustering does not occur. • **Enabled**— Sub NUMA clustering occurs. • **Auto** — The BIOS determines what Sub NUMA clustering is done.
IMC Interleave drop-down list	This BIOS option controls the interleaving between the Integrated Memory Controllers (IMCs). • **1-way Interleave**—There is no interleaving. • **2-way Interleave**—Addresses are interleaved between the two IMCs. • **Auto** —CPU determines the IMC Interleaving mode.

Name	Description
XPT Prefetch drop-down list	Whether XPT prefetch is used to enable a read request sent to the last level cache to issue a copy of that request to the memory controller prefetcher. This can be one of the following: • **Disabled**—The CPU does not use the XPT Prefetch option. • **Enabled**—The CPU enables the XPT prefetch option.
UPI Prefetch drop-down list	UPI prefetch is a mechanism to get the memory read started early on a DDR bus. This can be one of the following: • **Disabled**—The processor does not preload any cache data. • **Enabled**—The UPI prefetcher preloads the L1 cache with the data it determines to be the most relevant.
Energy Performance BIOS Config drop-down list	Allows you to determine whether system performance or energy efficiency is more important on this server. This can be one of the following: • **Performance** — The server provides all server components with full power at all times. This option maintains the highest level of performance and requires the greatest amount of power. • **Balanced Performance** — The server provides all server components with enough power to keep a balance between performance and power. • **Balanced Power** — The server provides all server components with enough power to keep a balance between performance and power. • **Power** — The server provides all server components with maximum power to keep reduce power consumption.
Power Performance Tuning drop-down list	Determines if the BIOS or Operating System can turn on the energy performance bias tuning. The options are BIOS and OS. • **BIOS**— Chooses BIOS for energy performance tuning. • **OS**— Chooses OS for energy performance tuning.

Name	Description
LLC Prefetch drop-down list	Whether the processor uses the LLC Prefetch mechanism to fetch the date into the LLC. This can be one of the following: • **Disabled**—The processor does not preload any cache data. • **Enabled**—The LLC prefetcher preloads the L1 cache with the data it determines to be the most relevant.
Package C State	The amount of power available to the server components when they are idle. This can be one of the following: • **No Limit**—The server may enter any available C state. • **Auto** —The CPU determines the physical elevation. • **C0 C1 State**—The server provides all server components with full power at all times. This option maintains the highest level of performance and requires the greatest amount of power. • **C2**—When the CPU is idle, the system reduces the power consumption further than with the C1 option. This requires less power than C1 or C0, but it takes the server slightly longer to return to high performance mode. • **C6 Non Retention**—When the CPU is idle, the system reduces the power consumption further than with the C3 option. This option saves more power than C0, C1, or C3, but there may be performance issues until the server returns to full power. • **C6 Retention**—When the CPU is idle, the system reduces the power consumption further than with the C3 option. This option saves more power than C0, C1, or C3, but there may be performance issues until the server returns to full power.

Name	Description
Hardware P-States drop-down list	Enables processor Hardware P-State. This can be one of the following: • **Disabled**—HWPM is disabled. • **HWPM Native Mode**—HWPM native mode is enabled. • **HWPM OOB Mode**—HWPM Out-Of-Box mode is enabled. • **Native Mode with no Legacy** (only GUI)

Table 5: BIOS Parameters in Memory Tab

Name	Description
Reboot Host Immediately checkbox	Upon checking, reboots the host server immediately. You must check the checkbox after saving changes.
Select Memory RAS configuration drop-down list	Determines how the memory reliability, availability, and serviceability (RAS) is configured for the server. This can be one of the following: • **Maximum Performance**—System performance is optimized. • **Mirror Mode 1LM**—System reliability is optimized by using half the system memory as backup.
Above 4G Decoding drop-down list	Enables or disables MMIO above 4GB or not. This can be one of the following: • **Disabled**—The server does not map I/O of 64-bit PCI devices to 4GB or greater address space. • **Enabled**—The server maps I/O of 64-bit PCI devices to 4GB or greater address space. **Note** PCI devices that are 64-bit compliant but use a legacy option ROM may not function correctly with this setting enabled.
DCPMM Firmware Downgrade drop-down list	Whether the BIOS supports downgrading the DCPMM firmware. This can be one of the following: • **Disabled**—Support is disabled. • **Enabled**—Support is enabled.

Name	Description
NUMA drop-down list	Whether the BIOS supports Non-Uniform Memory Access (NUMA). This can be one of the following: • **Disabled**—Support is disabled. • **Enabled**—Support is enabled.

Table 6: BIOS Parameters in Power/Performance Tab

Name	Description
Reboot Host Immediately checkbox	Upon checking, reboots the host server immediately. You must check the checkbox after saving changes.
Hardware Prefetcher drop-down list	Whether the processor allows the Intel hardware prefetcher to fetch streams of data and instruction from memory into the unified second-level cache when necessary. This can be one of the following: • **Disabled**—The hardware prefetcher is not used. • **Enabled**—The processor uses the hardware prefetcher when cache issues are detected.
Adjacent Cache Line Prefetcher drop-down list	Whether the processor fetches cache lines in even or odd pairs instead of fetching just the required line. This can be one of the following: • **Disabled**—The processor only fetches the required line. • **Enabled**—The processor fetches both the required line and its paired line.
DCU Streamer Prefetch drop-down list	Whether the processor uses the DCU IP Prefetch mechanism to analyze historical cache access patterns and preload the most relevant lines in the L1 cache. This can be one of the following: • **Disabled**—The processor does not try to anticipate cache read requirements and only fetches explicitly requested lines. • **Enabled**—The DCU prefetcher analyzes the cache read pattern and prefetches the next line in the cache if it determines that it may be needed.
DCU IP Prefetcher drop-down list	Whether the processor uses the DCU IP Prefetch mechanism to analyze historical cache access patterns and preload the most relevant lines in the L1 cache. This can be one of the following: • **Disabled**—The processor does not preload any cache data. • **Enabled**—The DCU IP prefetcher preloads the L1 cache with the data it determines to be the most relevant.

Name	Description
CPU Performance drop-down list	Sets the CPU performance profile for the options listed above. This can be one of the following: • **Enterprise**—All options are enabled. • **HPC**—All options are enabled. This setting is also known as high performance computing. • **Hight Throughput**—Only the DCU IP Prefetcher is enabled. The rest of the options are disabled. • **Custom**—All performance profile options can be configured from the BIOS setup on the server. In addition, the Hardware Prefetcher and Adjacent Cache-Line Prefetch options can be configured as well.

BIOS Profiles

On the Cisco UCS server, default token files are available for every server platform, and you can configure the value of these tokens using the Graphic User Interface (GUI), CLI interface, and the XML API interface. To optimize server performance, these token values must be configured in a specific combination.

Configuring a BIOS profile helps you to utilize pre-configured token files with the right combination of the token values. Some of the pre-configured profiles that are available are virtualization, high-performance, low power, and so on. You can download the various options of these pre-configured token files from the Cisco website and apply it on the servers through the BMC.

You can edit the downloaded profile to change the value of the tokens or add new tokens. This allows you to customize the profile to your requirements without having to wait for turnaround time.

Uploading a BIOS Profile

You can upload a BIOS profile either from a remote server location or through a browser client.

Before you begin

You must log in with admin privileges to perform this task.

Procedure

Step 1 In the **Navigation** pane, click the **Compute** menu.

Step 2 In the work pane, click the **BIOS** tab.

Step 3 Click the **Configure BIOS Profile** tab.

Step 4 To upload the BIOS profile using a remote server location, in the **BIOS Profile** area, click the **Upload** button.

Step 5 In the **Upload BIOS Profile** dialog box, update the following fields:

Name	Description
Upload BIOS Profile from drop-down list	The remote server type. This can be one of the following: • **TFTP** • **FTP** • **SFTP** • **SCP** • **HTTP**
Server IP/Hostname field	The IP address or hostname of the server on which the BIOS profile information is available. Depending on the setting in the Upload BIOS Profile from drop-down list, the name of the field may vary.
Path and Filename field	The path and filename of the BIOS profile on the remote server.
Username field	Username of the remote server.
Password field	Password of the remote server.
Upload button	Uploads the selected BIOS profile. **Note** If you chose SCP or SFTP as the remote server type while performing this action, a pop-up window is displayed with the message *Server (RSA) key fingerprint is <server_finger_print _ID> Do you wish to continue?*. Click Yes or No depending on the authenticity of the server fingerprint. The fingerprint is based on the host's public key and helps you to identify or verify the host you are connecting to.
Cancel button	Closes the wizard without making any changes to the firmware versions stored on the server.

Step 6 To upload the BIOS profile using a browser client, in the **BIOS Profile** area, click the **Upload** button.

Step 7 In the **Upload BIOS Profile** dialog box, update the following fields:

Name	Description
File field	The BIOS profile that you want to upload.
Browse button	Opens a dialog box that allows you to navigate to the appropriate file.

What to do next

Activate a BIOS profile.

Activating a BIOS Profile

Before you begin

You must log in with admin privileges to perform this task.

Procedure

Step 1 In the **Navigation** pane, click the **Compute** menu.
Step 2 In the work pane, click the **BIOS** tab.
Step 3 Click the **Configure BIOS Profile** tab.
Step 4 Select a BIOS profile from the **BIOS Profile** area and click **Activate**.
Step 5 At the prompt, click **Yes** to activate the BIOS profile.

Deleting a BIOS Profile

Before you begin

You must log in with admin privileges to perform this task.

Procedure

Step 1 In the **Navigation** pane, click the **Compute** menu.
Step 2 In the **Compute** menu, select a server.
Step 3 In the work pane, click the **BIOS** tab.
Step 4 Select a BIOS profile from the **BIOS Profile** area and click **Delete**.
Step 5 At the prompt, click **OK** to delete the BIOS profile.

Backing up a BIOS Profile

Before you begin

You must log in with admin privileges to perform this task.

Procedure

Step 1 In the **Navigation** pane, click the **Compute** menu.
Step 2 In the **Compute** menu, select a server.
Step 3 In the work pane, click the **BIOS** tab.
Step 4 Select a BIOS profile from the **BIOS Profile** area and click **Take Backup**.
Step 5 At the prompt, click **OK** to take a backup of the BIOS profile.

What to do next

Activate a BIOS profile.

Viewing BIOS Profile Details

Before you begin

You must log in with admin privileges to perform this task.

Procedure

Step 1 In the **Navigation** pane, click the **Compute** menu.
Step 2 In the **Compute** menu, select a server.
Step 3 In the work pane, click the **BIOS** tab.
Step 4 Select a BIOS profile from the **BIOS Profile** area and click **Details**.
Step 5 Review the following information in the **BIOS Profile Details** window:

Name	Description
Token Name column	Displays the token name of the BIOS profile.
Display Name column	Displays the user name of the BIOS profile.
Profile Value column	Displays the value that was provided in the uploaded file.
Actual Value column	Displays the value of the active BIOS configuration.

Setting Dynamic Front Panel Temperature Threshold

The Dynamic Front Panel Temperature Threshold option allows you to set the upper critical threshold for the front panel temperature sensor.

Procedure

Step 1 In the **Navigation** pane, click the **Chassis** menu.

Step 2 In the **Chassis** menu, click **Sensors**.

Step 3 In the **Sensors** pane, click the **Temperature** tab.

Step 4 Expand the **Dynamic Front Panel Temperature Threshold** area, and enter an upper critical threshold for the front panel temperature sensor in the **Critical** field. You can enter a value between 8 and 50.

Step 5 Click **Save Changes**.