Managing Blade Servers

This chapter includes the following sections:

- Blade Server Management, page 2
- Guidelines for Removing and Decommissioning Blade Servers, page 3
- Recommendations for Avoiding Unexpected Server Power Changes, page 4
- Booting a Blade Server, page 5
- Shutting Down a Blade Server, page 5
- Power Cycling a Blade Server, page 6
- Performing a Hard Reset on a Blade Server, page 7
- Resetting a Blade Server to Factory Default Settings, page 8
- Acknowledging a Blade Server, page 9
- Removing a Blade Server from a Chassis, page 9
- Decommissioning a Blade Server, page 10
- Turning On the Locator LED for a Blade Server, page 11
- Turning Off the Locator LED for a Blade Server, page 11
- Resetting the CMOS for a Blade Server, page 12
- Resetting the CIMC for a Blade Server, page 12
- Clearing TPM for a Blade Server, page 13
- Recovering the Corrupt BIOS on a Blade Server, page 14
- Issuing an NMI from a Blade Server, page 15
- Health LED Alarms, page 15
- Viewing Health LED Status, page 16

Blade Server Management

You can manage and monitor all blade servers in a Cisco UCS domain through Cisco UCS Manager. You can perform some blade server management tasks, such as changes to the power state, from the server and service profile.

The remaining management tasks can only be performed on the server.

The power supply units go into power save mode when a chassis has two blades or less. When a third blade is added to the chassis and is fully discovered, the power supply units return to regular mode.

If a blade server slot in a chassis is empty, Cisco UCS Manager provides information, errors, and faults for that slot. You can also re-acknowledge the slot to resolve server mismatch errors and to have Cisco UCS Manager rediscover the blade server in the slot.

Cisco UCS B460 M4 Blade Server Management

The Cisco UCS B460 M4 blade server consists of two full-width Cisco UCS B260 blade servers that are connected by a Cisco UCS scalability connector. Each individual blade server is called a node and can be either the master or slave node.

Because each Cisco UCS B460 M4 blade server has two different nodes, you should note the following:

- The master node is always the node in the highest numbered slots.
- Whenever the Cisco UCS B460 blade server is referred to in Cisco UCS Manager, the reference is to the master slot number.
- If you remove the Cisco UCS scalability connector from the Cisco UCS B460 M4 blade server, the **Physical Display** area in the Cisco UCS Manager GUI displays **Needs Resolution** on both master node slots and both slave node slots.
- The health LED displays both the individual health of the master and slave node, and the combined health of both nodes together. The combined health LED always displays the status of the node with the worst health. Any health LED alarms are shown individually.
- In the Cisco UCS Manager GUI, you can turn on and off the locator LEDs for either the master or the slave node. In the Cisco UCS Manager CLI, you can turn on and off the locator LEDs individually, or both locator LEDs at the same time.
- Power capping on the Cisco UCS B460 M4 blade server is applied at the server level. Each node is capped at one half of the total value.
- Updating firmware updates both the master and slave node at the same time. You cannot update the firmware on an individual node.
- Local disk configuration is supported only on the master node.
- The Cisco UCS B460 blade server does not distinguish between the SEL logs that are generated by either the master or the slave node. The logs are displayed on the same page and are differentiated by the slot number.
- On the Cisco UCS Manager GUI **Storage** tab, the **Local Disk Configuration Policy** and **Actual Disk Configurations** areas display only the data for the Cisco UCS B460 blade server master node. No fields are displayed for the slave node.

Upgrading to a Cisco UCS B460 M4 Blade Server

If you have a Cisco UCS B260 M4 blade server, you can purchase an upgrade kit to convert to a Cisco UCS B460 M4 blade server. For more information, see the appropriate *Cisco UCS Hardware Installation Guide*.

Before You Begin

You must have two Cisco UCS B260 M4 blade servers and a Cisco UCS scalability connector.

Procedure

Step 1 Verify that the existing Cisco UCS B260 M4 blade server is not associated with a service profile.

Step 2 Insert the second Cisco UCS B260 M4 blade server into the chassis either above or below the first blade server.

Note If the second blade server does not have a Cisco UCS scalability terminator, use the terminator from the first blade server.

Step 3 Decommission both Cisco UCS B260 M4 blade servers.

Step 4 Synchronize the firmware.
Use the **Firmware Auto Sync Server** policy in Cisco UCS Manager to automatically update the new server. For more information, see the appropriate *Cisco UCS B-Series Firmware Management Guide*.

Step 5 Replace the Cisco UCS scalability terminators with the Cisco UCS scalability connector.
The presence of the slots changes to mismatch, but discovery is not triggered.

Step 6 Reacknowledge the new Cisco UCS B460 M4 blade server.

Guidelines for Removing and Decommissioning Blade Servers

Consider the following guidelines when deciding whether to remove or decommission a blade server using Cisco UCS Manager:

Decommissioning a Blade Server

If you want to temporarily decommission a physically present and connected blade server, you can temporarily remove it from the configuration. A portion of the server's information is retained by Cisco UCS Manager for future use, in case the blade server is recommissioned.

Removing a Blade Server

Removing is performed when you physically remove a blade server from the Cisco UCS Manager by disconnecting it from the chassis. You cannot remove a blade server from Cisco UCS Manager if it is physically present and connected to a chassis. After the physical removal of the blade server is completed, the configuration for that blade server can be removed in Cisco UCS Manager.

During removal, active links to the blade server are disabled, all entries from databases are removed, and the server is automatically removed from any server pools that it was assigned to during discovery.

Note Only servers added to a server pool automatically during discovery are removed automatically. Servers that were manually added to a server pool must be removed manually.

To add a removed blade server back to the configuration, it must be reconnected, then rediscovered. When a server is reintroduced to Cisco UCS Manager, it is treated as a new server and is subject to the deep discovery process. For this reason, it is possible for Cisco UCS Manager to assign the server a new ID that might be different from the ID that it held before.

Recommendations for Avoiding Unexpected Server Power Changes

If a server is not associated with a service profile, you can use any available means to change the server power state, including the physical Power or Reset buttons on the server.

If a server is associated with, or assigned to, a service profile, you should only use the following methods to change the server power state:

- In Cisco UCS Manager GUI, go to the **General** tab for the server or the service profile associated with the server and select **Boot Server** or **Shutdown Server** from the **Actions** area.
- In Cisco UCS Manager CLI, scope to the server or the service profile associated with the server and use the **power up** or **power down** commands.

Important Do *not* use any of the following options on an associated server that is currently powered off:

- **Reset** in the GUI
- **cycle cycle-immediate** or **reset hard-reset-immediate** in the CLI
- The physical Power or Reset buttons on the server

If you reset, cycle, or use the physical power buttons on a server that is currently powered off, the server's actual power state might become out of sync with the desired power state setting in the service profile. If the communication between the server and Cisco UCS Manager is disrupted or if the service profile configuration changes, Cisco UCS Manager might apply the desired power state from the service profile to the server, causing an unexpected power change.

Power synchronization issues can lead to an unexpected server restart, as shown below:

Desired Power State in Service Profile	Current Server Power State	Server Power State After Communication Is Disrupted
Up	Powered Off	Powered On

Desired Power State in Service Profile	Current Server Power State	Server Power State After Communication Is Disrupted
Down	Powered On	Powered On **Note** Running servers are not shut down regardless of the desired power state in the service profile.

Booting a Blade Server

Before You Begin

Associate a service profile with a blade server or server pool.

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 service-profile** *profile-name*	Enters organization service profile mode for the specified service profile.
Step 3	UCS-A /org/service-profile # **power up**	Boots the blade server associated with the service profile.
Step 4	UCS-A /org/service-profile # **commit-buffer**	Commits the transaction to the system configuration.

The following example boots the blade server associated with the service profile named ServProf34 and commits the transaction:

```
UCS-A# scope org /
UCS-A /org* # scope service-profile ServProf34
UCS-A /org/service-profile* # power up
UCS-A /org/service-profile* # commit-buffer
UCS-A /org/service-profile #
```

Shutting Down a Blade Server

When you use this procedure to shut down a server with an installed operating system, Cisco UCS Manager triggers the OS into a graceful shutdown sequence.

Note When a blade server that is associated with a service profile is shut down, the VIF down alert F0283 and F0479 are automatically suppressed.

Before You Begin

Associate a service profile with a blade server or server pool.

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 service-profile** *profile-name*	Enters organization service profile mode for the specified service profile.
Step 3	UCS-A /org/service-profile # **power down**	Shuts down the blade server associated with the service profile.
Step 4	UCS-A /org/service-profile # **commit-buffer**	Commits the transaction to the system configuration.

The following example shuts down the blade server associated with the service profile named ServProf34 and commits the transaction:

```
UCS-A# scope org /
UCS-A /org # scope service-profile ServProf34
UCS-A /org/service-profile # power down
UCS-A /org/service-profile* # commit-buffer
UCS-A /org/service-profile #
```

Power Cycling a Blade Server

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope server** *chassis-num* / *server-num*	Enters chassis server mode for the specified blade server.
Step 2	UCS-A /chassis/server # **cycle** {**cycle-immediate** | **cycle-wait**}	Power cycles the blade server. Use the **cycle-immediate** keyword to immediately begin power cycling the blade server; use the **cycle-wait** keyword to schedule the power cycle to begin after all pending management operations have completed.

	Command or Action	Purpose
Step 3	UCS-A# **commit-buffer**	Commits the transaction to the system configuration.

The following example immediately power cycles blade server 4 in chassis 2 and commits the transaction:

```
UCS-A#  scope server 2/4
UCS-A /chassis/server # cycle cycle-immediate
UCS-A /chassis/server* # commit-buffer
UCS-A /chassis/server #
```

Performing a Hard Reset on a Blade Server

When you reset a server, Cisco UCS Manager sends a pulse on the reset line. You can choose to gracefully shut down the operating system. If the operating system does not support a graceful shutdown, the server is power cycled. The option to have Cisco UCS Manager complete all management operations before it resets the server does not guarantee the completion of these operations before the server is reset.

Note If you are trying to boot a server from a power-down state, you should not use **Reset**.

If you continue the power-up with this process, the desired power state of the servers become out of sync with the actual power state and the servers might unexpectedly shut down at a later time. To safely reboot the selected servers from a power-down state, click **Cancel**, then select the **Boot Server** action.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope server** *chassis-num* / *server-num*	Enters chassis server mode for the specified server.
Step 2	UCS-A /chassis/server # **reset** {**hard-reset-immediate** | **hard-reset-wait**}	Performs a hard reset of the blade server. Use the **hard-reset-immediate** keyword to immediately begin hard resetting the server; use the **hard-reset-wait** keyword to schedule the hard reset to begin after all pending management operations have completed.
Step 3	UCS-A /server # **commit-buffer**	Commits the transaction to the system configuration.

The following example performs an immediate hard reset of blade server 4 in chassis 2 and commits the transaction:

```
UCS-A#  scope server 2/4
UCS-A /chassis/server # reset hard-reset-immediate
UCS-A /chassis/server* # commit-buffer
UCS-A /chassis/server #
```

Resetting a Blade Server to Factory Default Settings

You can now reset a blade server to its factory settings. By default, the factory reset operation does not affect storage drives and flexflash drives. This is to prevent any loss of data. However, you can choose to reset these devices to a known state as well.

Important Resetting storage devices will result in loss of data.

Perform the following procedure to reset the server to factory default settings.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope server** [*chassis-num*/*server-num* | *dynamic-uuid*]	Enters server mode for the specified server.
Step 2	UCS-A /chassis/server # **reset factory-default** [**delete-flexflash-storage** | **delete-storage** [**create-initial-storage-volumes**]]	Resets server settings to factory default using the following command options: • **factory-default—**Resets the server to factory defaults without deleting storage • **delete-flexflash-storage—**Resets the server to factory defaults and deletes flexflash storage • **delete-storage—**Resets the server to factory defaults and deletes all storage • **create-initial-storage-volumes—**Resets the server to factory defaults, deletes all storage, sets all disks to their initial state **Important** Do not use the **create-initial-storage-volumes** command option if you want to use storage profiles. Creating initial volumes when you are using storage profiles may result in configuration errors.
Step 3	UCS-A /chassis/server* # **commit-buffer**	Commits any pending transactions.

The following example resets the server settings to factory default without deleting storage, and commits the transaction:

```
UCS-A# scope server 2/4
UCS-A /chassis/server # reset factory-default
UCS-A /chassis/server* # commit-buffer
```

The following example resets the server settings to factory default, deletes flexflash storage, and commits the transaction:

```
UCS-A# scope server 2/4
UCS-A /chassis/server # reset factory-default delete-flexflash-storage

UCS-A /chassis/server* # commit-buffer
```

The following example resets the server settings to factory default, deletes all storage, and commits the transaction:

```
UCS-A# scope server 2/4
UCS-A /chassis/server # reset factory-default delete-storage
UCS-A /chassis/server* # commit-buffer
```

The following example resets the server settings to factory default, deletes all storage, sets all disks to their initial state, and commits the transaction:

```
UCS-A# scope server 2/4
UCS-A /chassis/server # reset factory-default delete-storage create-initial-storage-volumes
UCS-A /chassis/server* # commit-buffer
```

Acknowledging a Blade Server

Perform the following procedure to rediscover the server and all endpoints in the server. For example, you can use this procedure if a server is stuck in an unexpected state, such as the discovery state.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **acknowledge server** *chassis-num* / *server-num*	Acknowledges the specified blade server.
Step 2	UCS-A# **commit-buffer**	Commits the transaction to the system configuration.

The following example acknowledges server 4 in chassis 2 and commits the transaction:

```
UCS-A#  acknowledge server 2/4
UCS-A* # commit-buffer
UCS-A #
```

Removing a Blade Server from a Chassis

Before You Begin

Physically remove the server from its chassis before performing the following procedure.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **remove server** *chassis-num* / *server-num*	Removes the specified blade server.
Step 2	UCS-A# **commit-buffer**	Commits the transaction to the system configuration.

The following example removes blade server 4 in chassis 2 and commits the transaction:

```
UCS-A#  remove server 2/4
UCS-A* # commit-buffer
UCS-A #
```

What to Do Next

If you physically re-install the blade server, you must re-acknowledge the slot for the Cisco UCS Manager to rediscover the server.

For more information, see Acknowledging a Blade Server, on page 9.

Decommissioning a Blade Server

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **decommission server** *chassis-num* / *server-num*	Decommissions the specified blade server.
Step 2	UCS-A# **commit-buffer**	Commits the transaction to the system configuration.

The following example decommissions blade server 4 in chassis 2 and commits the transaction:

```
UCS-A# decommission server 2/4
UCS-A* # commit-buffer
UCS-A #
```

Turning On the Locator LED for a Blade Server

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope server** *chassis-num* / *server-num*	Enters chassis server mode for the specified chassis.
Step 2	UCS-A /chassis/server # **enable locator-led** [**multi-master** | **multi-slave**]	Turns on the blade server locator LED. For the Cisco UCS B460 M4 blade server, you can add the following keywords: • **multi-master—**Turns on the LED for the master node only. • **multi-slave—**Turns on the LED for the slave node only.
Step 3	UCS-A /chassis/server # **commit-buffer**	Commits the transaction to the system configuration.

The following example turns on the locator LED for blade server 4 in chassis 2 and commits the transaction:

```
UCS-A# scope server 2/4
UCS-A /chassis/server # enable  locator-led
UCS-A /chassis/server* # commit-buffer
UCS-A /chassis/server #
```

The following example turns on the locator LED for blade server 7 in chassis 2 and commits the transaction:

```
UCS-A# scope chassis 2/7
UCS-A /chassis/server # enable locator-led multi-master
UCS-A /chassis/server* # commit-buffer
UCS-A /chassis/server #
```

Turning Off the Locator LED for a Blade Server

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope server** *chassis-num* / *server-num*	Enters chassis mode for the specified chassis.
Step 2	UCS-A /chassis/server # **disable locator-led** [**multi-master** | **multi-slave**]	Turns off the blade server locator LED. For the Cisco UCS B460 M4 blade server, you can add the following keywords: • **multi-master—**Turns off the LED for the master node only.

	Command or Action	Purpose
		• **multi-slave—**Turns off the LED for the slave node only.
Step 3	UCS-A /chassis/server # **commit-buffer**	Commits the transaction to the system configuration.

The following example turns off the locator LED for blade server 4 in chassis 2 and commits the transaction:

```
UCS-A# scope chassis 2/4
UCS-A /chassis/server # disable locator-led
UCS-A /chassis/server* # commit-buffer
UCS-A /chassis/server #
```

The following example turns off the locator LED for blade server 7 in chassis 2 and commits the transaction:

```
UCS-A# scope chassis 2/7
UCS-A /chassis/server # disable locator-led multi-master
UCS-A /chassis/server* # commit-buffer
UCS-A /chassis/server #
```

Resetting the CMOS for a Blade Server

Sometimes, troubleshooting a server might require you to reset the CMOS. Resetting the CMOS is not part of the normal maintenance of a server.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope server** *chassis-num* / *server-num*	Enters chassis server mode for the specified chassis.
Step 2	UCS-A /chassis/server # **reset-cmos**	Resets the CMOS for the blade server.
Step 3	UCS-A /chassis/server # **commit-buffer**	Commits the transaction to the system configuration.

The following example resets the CMOS for blade server 4 in chassis 2 and commits the transaction:

```
UCS-A# scope server 2/4
UCS-A /chassis/server # reset-cmos
UCS-A /chassis/server* # commit-buffer
UCS-A /chassis/server #
```

Resetting the CIMC for a Blade Server

Sometimes, with the firmware, troubleshooting a server might require you to reset the CIMC. Resetting the CIMC is not part of the normal maintenance of a server. After you reset the CIMC, the CIMC reboots with the running version of the firmware for that server.

If the CIMC is reset, the power monitoring functions of Cisco UCS become briefly unavailable until the CIMC reboots. Typically, the reset only takes 20 seconds; however, it is possible that the peak power cap can exceed during that time. To avoid exceeding the configured power cap in a low power-capped environment, consider staggering the rebooting or activation of CIMCs.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope server** *chassis-num* / *server-num*	Enters chassis server mode for the specified chassis.
Step 2	UCS-A /chassis/server # **scope CIMC**	Enters chassis server CIMC mode
Step 3	UCS-A /chassis/server/CIMC # **reset**	Resets the CIMC for the blade server.
Step 4	UCS-A /chassis/server/CIMC # **commit-buffer**	Commits the transaction to the system configuration.

The following example resets the CIMC for blade server 4 in chassis 2 and commits the transaction:

```
UCS-A# scope server 2/4
UCS-A /chassis/server # scope CIMC
UCS-A /chassis/server/cimc # reset
UCS-A /chassis/server/cimc* # commit-buffer
UCS-A /chassis/server/cimc #
```

Clearing TPM for a Blade Server

You can clear TPM only on Cisco UCS M4 blade and rack-mount servers that include support for TPM.

Caution Clearing TPM is a potentially hazardous operation. The OS may stop booting. You may also see loss of data.

Before You Begin

TPM must be enabled.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope server** [*chassis-num*/*server-num* | *dynamic-uuid*]	Enters server mode for the specified server.
Step 2	UCS-A# /chassis/server # **scope tpm** *tpm-ID*	Enters org TPM mode for the specified TPM.
Step 3	UCS-A# /chassis/server/tpm # **set adminaction clear-config**	Specifies that the TPM is to be cleared.

	Command or Action	Purpose
Step 4	UCS-A# /chassis/server/tpm # **commit-buffer**	Commits the transaction to the system configuration.

The following example shows how to clear TPM for a blade server:

```
UCS-A# scope server 1/3
UCS-A# /chassis/server # scope tpm 1
UCS-A# /chassis/server/tpm # set adminaction clear-config
UCS-A#/chassis/server/tpm* # commit-buffer
```

Recovering the Corrupt BIOS on a Blade Server

On rare occasions, an issue with a blade server may require you to recover the corrupted BIOS. This procedure is not part of the normal maintenance of a server. After you recover the BIOS, the blade server boots with the running version of the firmware for that server.

Before You Begin

Important Remove all attached or mapped USB storage from a server before you attempt to recover the corrupt BIOS on that server. If an external USB drive is attached or mapped from vMedia to the server, BIOS recovery fails.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope server** *chassis-id* / *server-id*	Enters chassis server mode for the specified blade server in the specified chassis.
Step 2	UCS-A /chassis/server # **recover-bios** *version*	Loads and activates the specified BIOS version.
Step 3	UCS-A /chassis/server # **commit-buffer**	Commits the transaction.

The following example shows how to recover the BIOS:

```
UCS-A# scope server 1/7
UCS-A /chassis/server # recover-bios S5500.0044.0.3.1.010620101125
UCS-A /chassis/server* # commit-buffer
UCS-A /chassis/server #
```

Issuing an NMI from a Blade Server

Perform the following procedure if the system remains unresponsive and you need Cisco UCS Manager to issue a Non-Maskable Interrupt (NMI) to the BIOS or operating system from the CIMC. This action creates a core dump or stack trace, depending on the operating system installed on the server.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope server** [*chassis-num*/*server-num* | *dynamic-uuid*]	Enters server mode for the specified server.
Step 2	UCS-A /chassis/server # **diagnostic-interrupt**	
Step 3	UCS-A /chassis/server* # **commit-buffer**	Commits any pending transactions.

The following example sends an NMI from server 4 in chassis 2 and commits the transaction:

```
UCS-A# scope server 2/4
UCS-A /chassis/server # diagnostic-interrupt
UCS-A /chassis/server* # commit-buffer
UCS-A /chassis/server #
```

Health LED Alarms

The blade health LED is located on the front of each Cisco UCS B-Series blade server. Cisco UCS Manager allows you to view the sensor faults that cause the blade health LED to change color from green to amber or blinking amber.

The health LED alarms display the following information:

Name	Description
Severity column	The severity of the alarm. This can be one of the following: • Critical—The blade health LED is blinking amber. • Minor—The blade health LED is amber.
Description column	A brief description of the alarm.
Sensor ID column	The ID of the sensor the triggered the alarm.
Sensor Name column	The name of the sensor that triggered the alarm.

Viewing Health LED Status

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope server** *chassis-id* / *blade-id*	Enters chassis server mode for the specified server.
Step 2	UCS-A /chassis/server # **show health-led expand**	Displays the health LED and sensor alarms for the selected server.

The following example shows how to display the health LED status and sensor alarms for chassis 1 server 1:

```
UCS-A# scope server 1/1
UCS-A /chassis/server # show health-led
Health LED:
    Severity: Minor
    Reason:: P0V75_STBY:Voltage Threshold Crossed;TEMP_SENS_FRONT:Temperature Threshold
Crossed;
    Color: Amber
    Oper State:: On

    Sensor Alarm:
        Severity: Minor
        Sensor ID: 7
        Sensor Name: P0V75_STBY
        Alarm Desc: Voltage Threshold Crossed

        Severity: Minor
        Sensor ID: 76
        Sensor Name: TEMP_SENS_FRONT
        Alarm Desc: Temperature Threshold Crossed

        Severity: Minor
        Sensor ID: 91
        Sensor Name: DDR3_P1_D2_TMP
        Alarm Desc: Temperature Threshold Crossed

UCS-A /chassis/server #
```