



CHAPTER 2

Installing the Server

This chapter describes how to install the server, and it includes the following sections:

- [Unpacking and Inspecting the Server, page 2-2](#)
- [Preparing for Server Installation, page 2-3](#)
- [Installing the Server In a Rack, page 2-5](#)
- [Initial Server Setup, page 2-8](#)
- [System BIOS and CIMC Firmware, page 2-12](#)
- [Updating the BIOS and CIMC Firmware, page 2-12](#)
- [Service DIP Switch, page 2-14](#)



Note

Before you install, operate, or service a server, review the [Regulatory Compliance and Safety Information for Cisco UCS C-Series Servers](#) for important safety information.



Warning

IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.
Statement 1071

SAVE THESE INSTRUCTIONS

Unpacking and Inspecting the Server

Caution When handling internal server components, wear an ESD strap and handle modules by the carrier edges only.

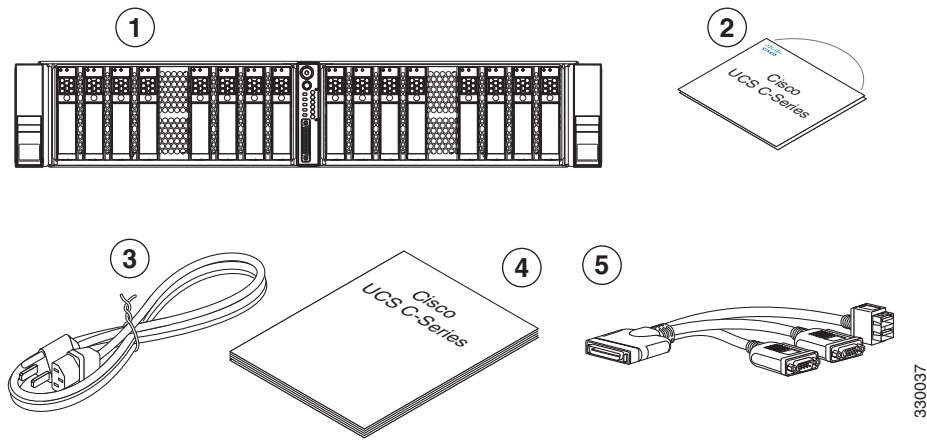
Tip Keep the shipping container in case the server requires shipping in the future.

Note The chassis is thoroughly inspected before shipment. If any damage occurred during transportation or any items are missing, contact your customer service representative immediately.

To inspect the shipment, follow these steps:

- Step 1** Remove the server from its cardboard container and save all packaging material.
- Step 2** Compare the shipment to the equipment list provided by your customer service representative and [Figure 2-1](#). Verify that you have all items.
- Step 3** Check for damage and report any discrepancies or damage to your customer service representative. Have the following information ready:
 - Invoice number of shipper (see the packing slip)
 - Model and serial number of the damaged unit
 - Description of damage
 - Effect of damage on the installation

Figure 2-1 Shipping Box Contents



1	Server	3	Documentation
2	Power cord (optional, up to two)	4	KVM cable

Preparing for Server Installation

This section provides information about preparing for server installation, and it includes the following topics:

- [Installation Guidelines, page 2-3](#)
- [Rack Requirements, page 2-4](#)
- [Equipment Requirements, page 2-4](#)
- [Slide Rail Adjustment Range, page 2-4](#)

Installation Guidelines



Warning

To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of: 35° C (95° F).

Statement 1047



Warning

The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device.

Statement 1019



Warning

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 250 V, 15 A.

Statement 1005



Warning

Installation of the equipment must comply with local and national electrical codes.

Statement 1074

When you are installing a server, use the following guidelines:

- Plan your site configuration and prepare the site before installing the server. See the [Cisco UCS Site Preparation Guide](#) for the recommended site planning tasks.
- Ensure that there is adequate space around the server to allow for servicing the server and for adequate airflow. The airflow in this server is from front to back.
- Ensure that the air-conditioning meets the thermal requirements listed in the [Server Specifications](#).
- Ensure that the cabinet or rack meets the requirements listed in the “[Rack Requirements](#)” section on [page 2-4](#).
- Ensure that the site power meets the power requirements listed in the [Server Specifications](#). If available, you can use an uninterruptible power supply (UPS) to protect against power failures.



Caution

Avoid UPS types that use ferroresonant technology. These UPS types can become unstable with systems such as the Cisco UCS, which can have substantial current draw fluctuations from fluctuating data traffic patterns.

Rack Requirements

This section provides the requirements for the standard open racks, assuming an external ambient air temperature range of 32° F to 95° F (0° C to 35° C).

The rack must be of the following type:

- A standard 19-in. (48.3-cm) wide, four-post EIA rack, with mounting posts that conform to English universal hole spacing, per section 1 of ANSI/EIA-310-D-1992.
- The rack post holes can be #12-24 square or round, or #10-32 round when you use the supplied slide rails.
- The minimum vertical rack space per server must be two RUs, equal to 3.5 in. (88.9 mm).

Equipment Requirements

The slide rails supplied by Cisco Systems for this server do not require tools for installation if you install them in a rack that has #12-24 square or round holes.

However, if you install the slide rails in a rack that has #10-32 round holes, a slotted screwdriver is required to remove the #12-24 mounting pegs from the front of the slide rails.

Slide Rail Adjustment Range

The slide rails for this server have an adjustment range of 26 to 36 inches (660 to 914 mm).

Installing the Server In a Rack

This section describes how to install the server in a rack.



Warning

To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

This unit should be mounted at the bottom of the rack if it is the only unit in the rack.

When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.

If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

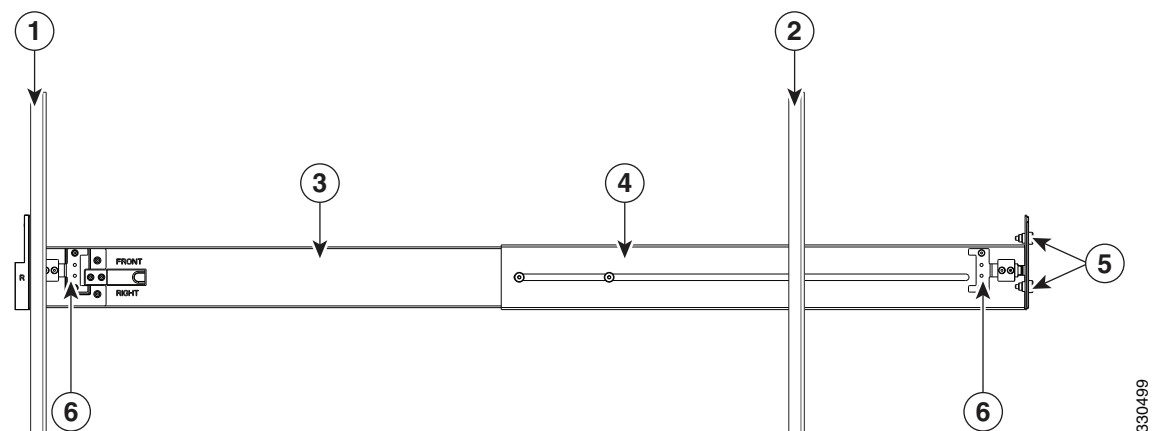
Statement 1006

To install the slide rails and the server into a rack, follow these steps:

Step 1 Install the slide rails into the rack (see [Figure 2-2](#)):

- a. Align the slide-rail assembly inside the rack posts with the length-adjustment bracket ([Figure 2-2](#), item 4) toward the rear of the rack.
- b. Compress the length-adjustment bracket until the mounting pegs (item 5) and locking clips (item 6) on the slide-rail assembly engage the desired rack holes on the front and rear rack posts.
 - The #12-24 mounting pegs fit square or round holes. They fit the shape of the hole when the pegs are compressed.
 - The #10-32 mounting pegs are enclosed in the center of the compressible #12-24 *rear* pegs. However, to use the #10-32 pegs, you must use a slotted screwdriver to remove the #12-24 *front* pegs.

Figure 2-2 Attaching a Slide-Rail Assembly



1	Front-right rack post	4	Length-adjustment bracket
2	Rear-right rack post	5	Mounting pegs (two on each end of assembly)
3	Slide-rail assembly	6	Locking clip (one on each end of assembly)

- c. Attach the second slide-rail assembly to the opposite side of the rack. Ensure that the two slide-rail assemblies are level and at the same height with each other.

- d. Pull the inner slide rails on each assembly out toward the rack front until they hit the internal stops and lock in place.

Step 2 Insert the server into the slide rails (see [Figure 2-3](#)):

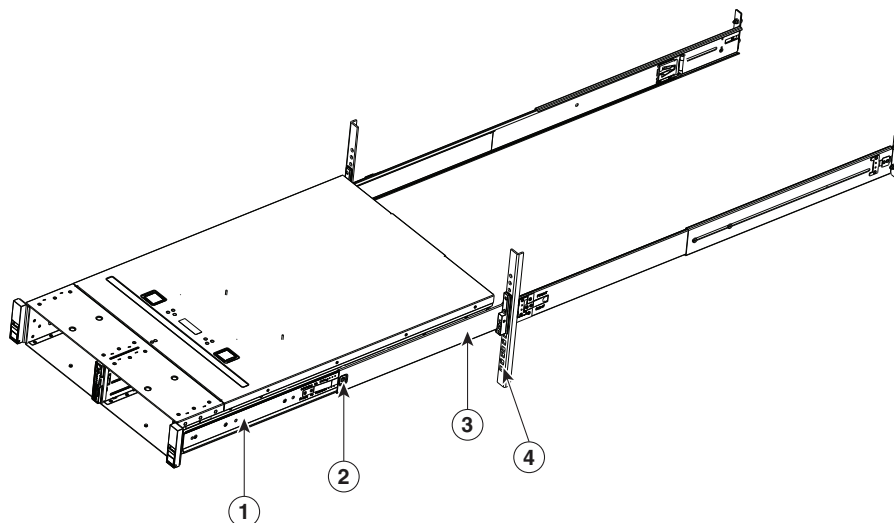


Caution

This server weighs approximately 83 pounds (38 kilograms) when fully loaded with components. We recommend that you use a minimum of two people when lifting the server. Attempting this procedure alone could result in personal injury or equipment damage.

- a. Align the inner rails that are attached to the server sides with the front ends of the empty slide rails.
- b. Push the server into the slide rails until it stops at the internal stops.
- c. Push in the slide rail locking clip (item 2) on each inner rail, and then continue pushing the server into the rack until its front flanges latch onto the rack posts.

Figure 2-3 Inserting the Server Into the Slide Rails



1	Inner rail attached to server	3	Slide rail assembly on rack post
2	Slide rail locking clip	4	Right-front rack post

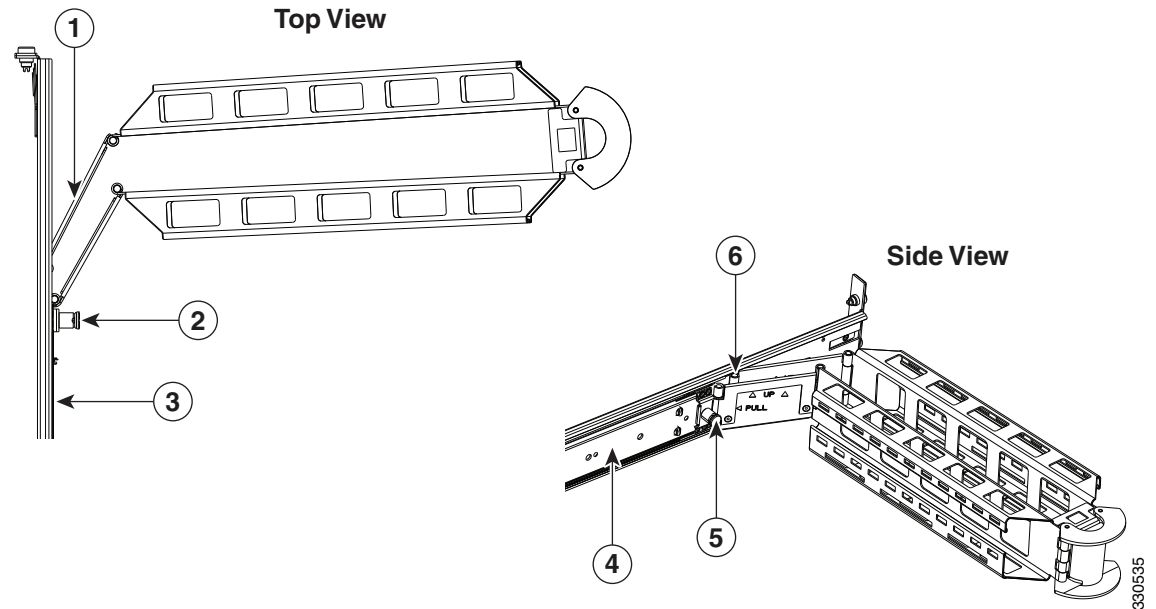
Step 3 Attach the (optional) cable management arm (CMA) to the rear of the slide rails (see [Figure 2-4](#)):



Note

The CMA is reversible left-to-right.

- a. With the server pushed fully into the rack, insert the CMA tab labelled OUTER RAIL (items 1 and 6) into the clip inside the rear of the outer slide rail. Insert the tab into the clip until it clicks and locks.
- b. Pull outward on the spring-loaded peg that is on the CMA tab labelled INNER RAIL (items 2 and 5). You can turn this peg 90 degrees to lock it in the open position.
- c. Push the CMA tab labelled INNER RAIL over the end of the inner rail that is attached to the server, and then release the spring-loaded peg. The peg must align with and enter the hole in the inner rail to lock the CMA in place.

Figure 2-4 Attaching the Cable Management Arm

1	OUTER RAIL CMA tab attached to outer slide rail	4	Rear of left slide rail assembly
2	INNER RAIL CMA tab attached to inner slide rail on server	5	INNER RAIL CMA tab attached to inner slide rail on server
3	Rear of left slide rail assembly	6	OUTER RAIL CMA tab attached to outer slide rail



Note The CMA is reversible left-to-right.

Initial Server Setup

This section includes the following topics:

- [Connecting and Powering On the Server \(Standalone Mode\)](#), page 2-8
- [NIC Modes and NIC Redundancy Settings](#), page 2-11

Connecting and Powering On the Server (Standalone Mode)

**Note**

This section describes how to power on the server, assign an IP address, and connect to server management when using the server *in standalone mode*. To use the server in UCS integration, specific cabling and settings are required. See [Installation for Cisco UCS Integration](#), page D-1.

**Note**

The server is shipped with a default NIC mode called Shared LOM EXT, default NIC redundancy is active-active, and DHCP is enabled. Shared LOM EXT mode enables the 1-Gb Ethernet ports and the ports on any installed Cisco virtual interface card (VIC) to access the Cisco Integrated Management Interface (CIMC). If you want to use the dedicated management ports to access the CIMC, you can connect to the server and change the NIC mode as described in [Step 3](#) of the following procedure. In that step, you can also change the NIC redundancy and set static IP settings.

Use the following procedure to perform initial setup of the server:

- Step 1** Attach a supplied power cord to each power supply in your server, and then attach the power cord to a grounded AC power outlet. See the [Power Specifications](#), page A-2 for power specifications.

Wait for approximately two minutes to let the server boot in standby power during the first bootup.

You can verify power status by looking at the Power Status LED (see [Figure 1-1 on page 1-1](#)):

- Off—There is no AC power present in the server.
- Amber—The server is in standby power mode. Power is supplied only to the CIMC and some motherboard functions.
- Green—The server is in main power mode. Power is supplied to all server components.

**Note**

During bootup, the server beeps once for each USB device that is attached to the server. Even if there are no external USB devices attached, there is a short beep for each virtual USB device such as a virtual floppy drive, CD/DVD drive, keyboard, or mouse. A beep is also emitted if a USB device is hot-plugged or hot-unplugged during BIOS power-on self test (POST), or while you are accessing the BIOS Setup utility or the EFI shell.

- Step 2** Connect a USB keyboard and VGA monitor by using the supplied KVM cable connected to the KVM connector on the front panel (see [Figure 1-1 on page 1-1](#)).

**Note**

Alternatively, you can use the VGA and USB ports on the rear panel. However, you cannot use the front panel VGA and the rear panel VGA at the same time. If you are connected to one VGA connector and you then connect a video device to the other connector, the first VGA connector is disabled.

- Step 3** Set NIC mode, NIC redundancy, and choose whether to enable DHCP or set static network settings:
- Press the **Power** button to boot the server. Watch for the prompt to press F8.
 - During bootup, press **F8** when prompted to open the BIOS CIMC Configuration Utility.
 - Set the NIC mode to your choice for which ports to use to access the CIMC for server management (see [Figure 1-2 on page 1-2](#) for identification of the ports):

- **Shared LOM EXT (default)**—This is shared LOM extended mode. This is the factory-default setting, along with Active-active NIC redundancy and DHCP-enabled. With this mode, the shared LOM and Cisco Card interfaces are both enabled.

In this mode, DHCP replies are returned to both the shared LOM ports and the Cisco card ports. If the system determines that the Cisco card connection is not getting its IP address from a Cisco UCS Manager system because the server is in standalone mode, further DHCP requests from the Cisco card are disabled. Use the Cisco Card NIC mode if you want to connect to the CIMC through a Cisco card in standalone mode.

- **Dedicated**—The dedicated management port is used to access the CIMC. You must select a NIC redundancy and IP setting.
- **Shared LOM**—The 1-Gb Ethernet ports are used to access the CIMC. You must select a NIC redundancy and IP setting.
- **Cisco Card**—The ports on an installed Cisco UCS virtual interface card (VIC) are used to access the CIMC. You must select a NIC redundancy and IP setting.
- **Shared LOM 10G**—The two 10-Gb Ethernet ports are used to access the CIMC. You must select a NIC redundancy and IP setting.



Note The Cisco Card NIC mode is currently supported only with a Cisco UCS VIC that is installed in PCIe slot 7. See also [Special Considerations for Cisco UCS Virtual Interface Cards, page 3-50](#).

- Use this utility to change the NIC redundancy to your preference. This server has three possible NIC redundancy settings:
 - **None**—(Available only with the *Shipping* NIC mode) The Ethernet ports operate independently and do not fail over if there is a problem.
 - **Active-standby**—If an active Ethernet port fails, traffic fails over to a standby port.
 - **Active-active**—All Ethernet ports are utilized simultaneously. See [NIC Modes and NIC Redundancy Settings, page 2-11](#) for more information.
- Choose whether to enable DHCP for dynamic network settings, or to enter static network settings.



Note Before you enable DHCP, your DHCP server must be preconfigured with the range of MAC addresses for this server. The MAC address is printed on a label on the rear of the server. This server has a range of six MAC addresses assigned to the CIMC. The MAC address printed on the label is the beginning of the range of six contiguous MAC addresses.

- Optional: Use this utility to make VLAN settings, and to set a default CIMC user password.



Note Changes to the settings take effect after approximately 45 seconds. Refresh with **F5** and wait until the new settings appear before you reboot the server in the next step.

- Press **F10** to save your settings and reboot the server.



Note If you chose to enable DHCP, the dynamically assigned IP and MAC addresses are displayed on the console screen during bootup.

- Step 4** Connect to the CIMC for server management. Connect Ethernet cables from your LAN to the server by using the ports that you selected by your NIC Mode setting in [Step 3](#). The Active-active and Active-passive NIC redundancy settings require you to connect to two ports.
- Step 5** Use a browser and the IP address of the CIMC to connect to the CIMC Setup Utility. The IP address is based upon the settings that you made in [Step 3](#) (either a static address or the address assigned by your DHCP server).



Note The default user name for the server is *admin*. The default password is *password*.

To manage the server, see the *Cisco UCS C-Series Rack-Mount Server Configuration Guide* or the *Cisco UCS C-Series Rack-Mount Server CLI Configuration Guide* for instructions on using those interfaces. The links to these documents are in the C-Series documentation roadmap:

<http://www.cisco.com/go/unifiedcomputing/c-series-doc>

NIC Modes and NIC Redundancy Settings

This server has the following NIC mode settings that you can choose from:

- **Shared LOM EXT (default)**—This is shared LOM extended mode. This is the factory-default setting, along with Active-active NIC redundancy and DHCP-enabled. With this mode, the shared LOM and Cisco Card interfaces are both enabled.

In this mode, DHCP replies are returned to both the shared LOM ports and the Cisco card ports. If the system determines that the Cisco card connection is not getting its IP address from a Cisco UCS Manager system because the server is in standalone mode, further DHCP requests from the Cisco card are disabled. Use the Cisco Card NIC mode if you want to connect to the CIMC through a Cisco card in standalone mode.

- **Dedicated**—The dedicated management port is used to access the CIMC. You must select a NIC redundancy and IP setting.
- **Shared LOM**—The 1-Gb Ethernet ports are used to access the CIMC. You must select a NIC redundancy and IP setting.
- **Cisco Card**—The ports on an installed Cisco UCS virtual interface card (VIC) are used to access the CIMC. You must select a NIC redundancy and IP setting.
- **Shared LOM 10G**—The two 10-Gb Ethernet ports are used to access the CIMC. You must select a NIC redundancy and IP setting.

**Note**

The Cisco Card NIC mode is currently supported only with a Cisco UCS VIC that is installed in PCIe slot 7. See also [Special Considerations for Cisco UCS Virtual Interface Cards, page 3-50](#).

This server has the following NIC redundancy settings that you can choose from:

- **None**—The Ethernet ports operate independently and do not fail over if there is a problem.
- **Active-standby**—If an active Ethernet port fails, traffic fails over to a standby port.
- **Active-active**—All Ethernet ports are utilized simultaneously.

The active/active setting uses Mode 5 or Balance-TLB (adaptive transmit load balancing). This is channel bonding that does not require any special switch support. The outgoing traffic is distributed according to the current load (computed relative to the speed) on each slave. Incoming traffic is received by the current slave. If the receiving slave fails, another slave takes over the MAC address of the failed receiving slave.

System BIOS and CIMC Firmware

This section includes information about the system BIOS and it includes the following sections:

- [Updating the BIOS and CIMC Firmware, page 2-12](#)
- [Accessing the System BIOS, page 2-13](#)

Updating the BIOS and CIMC Firmware

**Caution**

When you upgrade the BIOS firmware, you must also upgrade the CIMC firmware to the same version or the server will not boot. Do not power off the server until the BIOS and CIMC firmware are matching or the server will not boot.

Cisco provides the Cisco Host Upgrade Utility to assist with simultaneously upgrading the BIOS, CIMC, and other firmware to compatible levels.

The server uses firmware obtained from and certified by Cisco. Cisco provides release notes with each firmware image. There are several methods for updating the firmware:

- **Recommended method for systems running firmware level 1.2 or later:** Use the Cisco Host Upgrade Utility to simultaneously upgrade the CIMC, BIOS, LOM, LSI storage controller, and Cisco UCS P81E VIC firmware to compatible levels.

See the *Cisco Host Upgrade Utility Quick Reference Guide* for your firmware level at the documentation roadmap link below.

**Note**

Your system firmware must be at minimum level 1.2 to use the Cisco Host Upgrade Utility. If your firmware is prior to level 1.2, you must use the methods below to update the BIOS and CIMC firmware individually.

- You can upgrade the BIOS using the EFI interface, or upgrade from a Windows or Linux platform. See the *Cisco UCS C-Series Rack-Mount Server BIOS Upgrade Guide*.
- You can upgrade the CIMC firmware by using the CIMC GUI interface. See the *Cisco UCS C-Series Rack-Mount Server Configuration Guide*.
- You can upgrade the CIMC firmware by using the CIMC CLI interface. See the *Cisco UCS C-Series Rack-Mount Server CLI Configuration Guide*.

For links to the documents listed above, see the documentation roadmap at the following URL:

<http://www.cisco.com/go/unifiedcomputing/c-series-doc>

Accessing the System BIOS

To change the BIOS settings for your server, follow these steps. Detailed instructions are also printed on the BIOS screens.

Step 1 Enter the BIOS setup utility by pressing the **F2** key when prompted during bootup.



Note The version and build of the current BIOS are displayed on the Main page of the utility.

Step 2 Use the arrow keys to select the BIOS menu page.

Step 3 Highlight the field to be modified by using the arrow keys.

Step 4 Press **Enter** to select the field that you want to change, and then modify the value in the field.

Step 5 Press the right arrow key until the Exit menu screen is displayed.

Step 6 Follow the instructions on the Exit menu screen to save your changes and exit the setup utility (or Press **F10**). You can exit without saving changes by pressing **Esc**.

Service DIP Switch

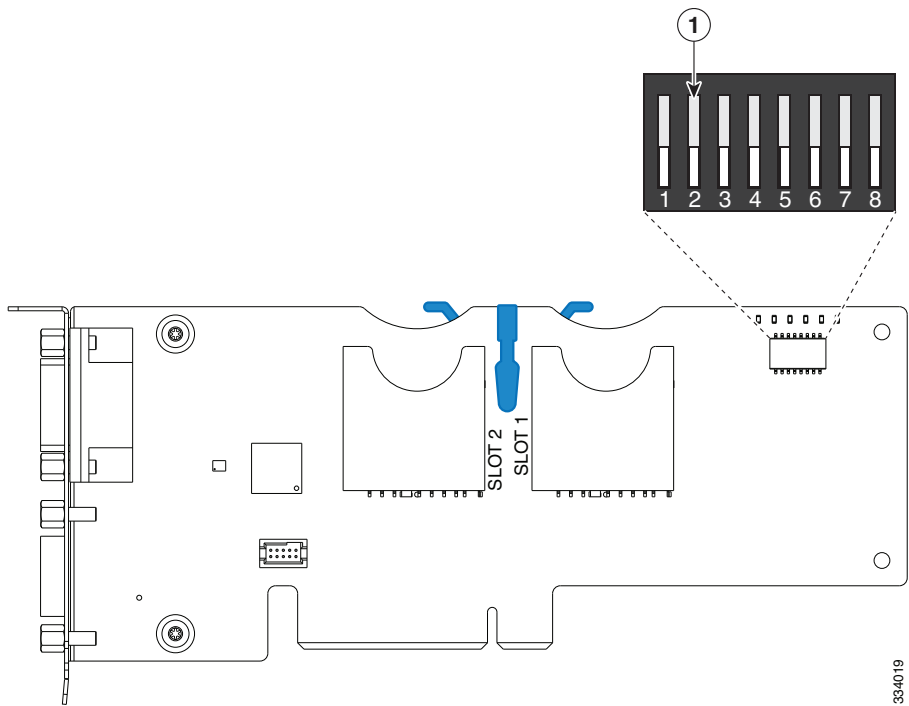
This server includes a DIP switch on the I/O riser module that you can use to recover from a corrupted BIOS.

DIP Switch Location on the I/O Riser

See [Figure 2-5](#). The block of DIP switches is located on the I/O riser. The default position for all switches is open (down).

The I/O riser is the removable card that includes the rear-panel serial and VGA connectors. See [Figure 3-5](#) for the location of the I/O riser in the server.

Figure 2-5 I/O Riser, Showing DIP Switches



1	DIP switch 2 for BIOS recovery (shown in default open position)	-	
---	--	---	--

Using the BIOS Recovery DIP Switch

See [Figure 2-5](#) for the location of the DIP switch.

-
- Step 1** Download the BIOS update package and extract it to a temporary location.
- Step 2** Copy the BIOS recovery files to the root directory of a USB thumb drive using either one of the following methods:
- Copy the contents of the extracted UEFI folder to the root directory of a USB thumb drive. The UEFI folder contains the flash utility, BIOS recovery image, and other necessary files that are required in this procedure.
 - The recovery folder contains a recovery ISO image. Extract and copy the contents of the recovery ISO image to the root directory of a USB thumb drive. The recovery ISO image contains the flash utility, BIOS recovery image, and other necessary files that are required in this procedure.
- Step 3** Power off the server as described in [Shutting Down and Powering Off the Server](#), page 3-7.
- Step 4** Disconnect all power cords from the power supplies.
- Step 5** Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.



Caution If you cannot safely view and access the component, remove the server from the rack.

- Step 6** Remove the top cover as described in [Removing and Replacing the Server Top Cover](#), page 3-8.
- Step 7** Locate BIOS recovery DIP switch 2. See [Figure 2-5](#).
- Step 8** Use a small pointed object such as a screwdriver to move DIP switch 2 to the closed (upper) position.
- Step 9** Reconnect AC power cords to the server. The server powers up to standby power mode.
- Step 10** Insert the USB thumb drive that you prepared in [Step 2](#) into a USB port on the server.
- Step 11** Return the server to main power mode by pressing the **Power** button on the front panel.
- The server boots with the updated BIOS boot block. When the BIOS detects a valid `recovery.cap` file on the USB thumb drive, it proceeds with the BIOS update.
- Step 12** Wait for server to complete the BIOS update, then remove the USB thumb drive from the server.



Note During the BIOS update, the CIMC will shut down the server and the screen will be blank for about 10 minutes. Do not unplug the power cords during this update. The CIMC will power on the server after the update is complete.

- Step 13** After the server has fully booted, power off the server again and disconnect all power cords.
- Step 14** Move DIP switch 2 back to the default open (lower) position.



Note If you do not move the switch back to the default position, the CIMC will attempt to recover the BIOS every time you boot the server.

- Step 15** Replace the top cover, replace the server in the rack, replace power cords and any other cables, then power on the server by pressing the **Power** button.
-

