



## Installing the Server

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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 2-11](#)
- [NIC Modes and NIC Redundancy Settings, page 2-14](#)
- [System BIOS and Cisco IMC Firmware, page 2-15](#)



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**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.

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**Warning**

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**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

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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.

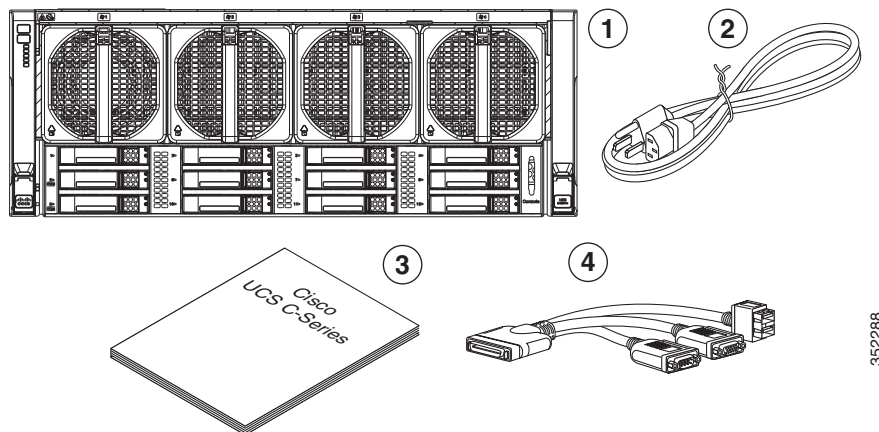

**Note**

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**



<b>1</b>	Server	<b>3</b>	Documentation
<b>2</b>	Power cord (up to four)	<b>4</b>	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 41°F to 95°F (5°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 square 0.38-inch (9.6 mm), round 0.28-inch (7.1 mm), #12-24 UNC, or #10-32 UNC when you use the supplied slide rails.
- The minimum vertical rack space per server must be four RUs, equal to 7 in. (17.78 cm).

## 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 square 0.38-inch (9.6 mm), round 0.28-inch (7.1 mm), or #12-24 UNC threaded holes.

## 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 contains the following topics:

- [Installing the Slide Rails, page 2-5](#)
- [Installing the Cable Management Arm \(Optional\), page 2-9](#)
- [Reversing the Cable Management Arm \(Optional\), page 2-10](#)



**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.**

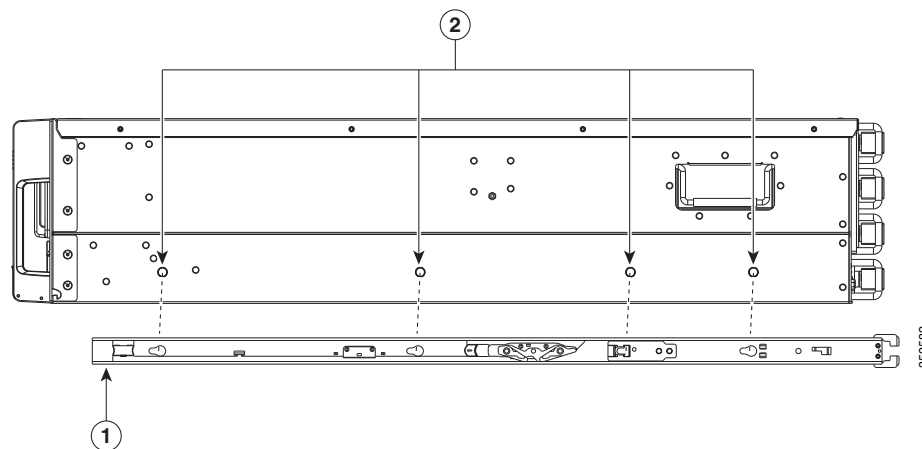
Statement 1006

## Installing the Slide Rails

**Step 1** Attach the inner rails to the sides of the server:

- Align an inner rail with one side of the server so that the four keyed slots in the rail align with the four pegs on the side of the server (see [Figure 2-2](#)).
- Set the keyed slots over the pegs, and then slide the rail toward the rear to lock it in place on the pegs.
- Install the second inner rail to the opposite side of the server.

**Figure 2-2** Attaching Inner Rail to Side of Server

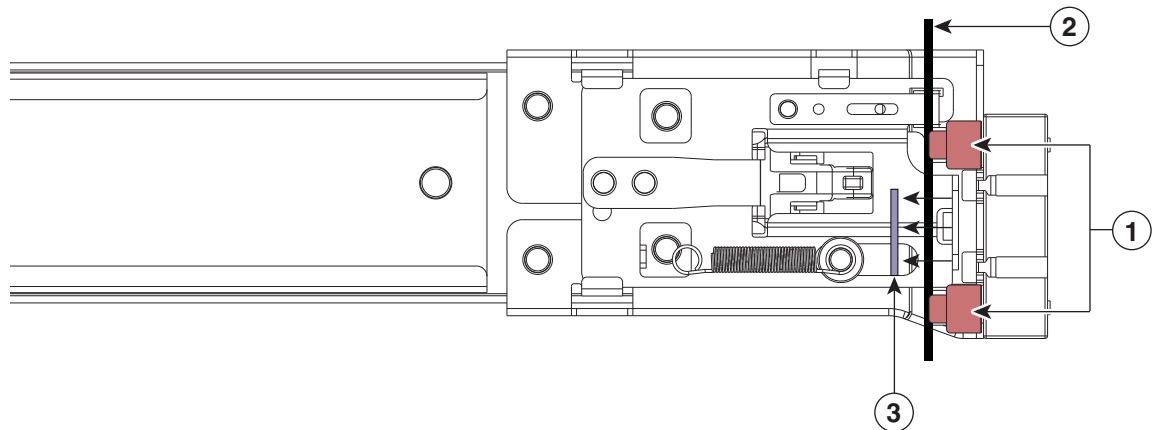


<b>1</b>	Inner rail	<b>2</b>	Pegs on side of server
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**Step 2** Open the front securing plate on both slide-rail assemblies. The front end of the slide-rail assembly has a spring-loaded securing plate that must be open before you can insert the mounting pegs into the rack-post holes.

On the *outside* of the assembly, push the green arrow button toward the rear to open the securing plate (see [Figure 2-3](#)).

**Figure 2-3** Front Securing Mechanism, Inside of Front End



<b>1</b>	Front mounting pegs	<b>3</b>	Securing plate shown pulled back to open position
<b>2</b>	Rack post		

**Step 3** Install the slide rails into the rack:

- a. Align one slide-rail assembly front end with the front rack-post holes that you want to use.

The slide rail front-end wraps around the outside of the rack post and the mounting pegs enter the rack-post holes from the outside-front (see [Figure 2-3](#)).



**Note** The rack post must be between the mounting pegs and the *open* securing plate.

- b. Push the mounting pegs into the rack-post holes.
- c. Press the securing plate release button, marked PUSH. The spring-loaded securing plate closes to lock the pegs in place.
- d. Adjust the slide-rail length, and then push the rear mounting pegs into the corresponding rear rack-post holes. The slide rail must be level front-to-rear.
- The rear mounting pegs enter the rear rack-post holes from the inside of the rack post.
- e. Attach the second slide-rail assembly to the opposite side of the rack. Ensure that the two slide-rail assemblies are at the same height with each other and are level front-to-back.
- f. Pull the inner slide rails on each assembly out toward the rack front until they hit the internal stops and lock in place.

**Step 4** Insert the server into the slide rails:

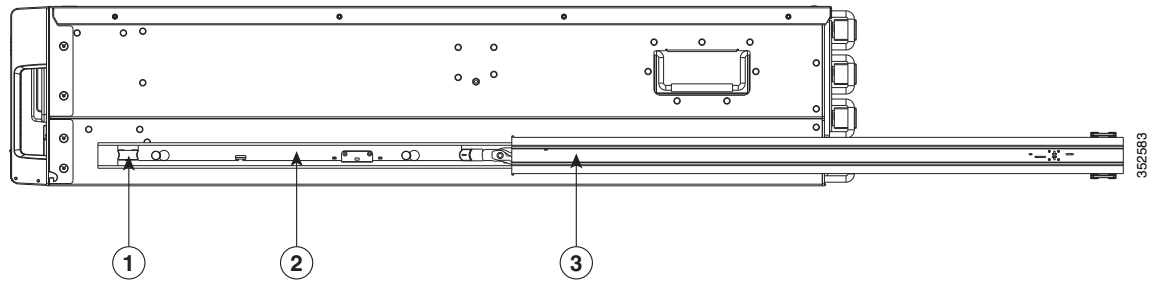


**Caution**

This server weighs approximately 130 pounds (59 kilograms) when fully loaded with components. We recommend that you use a minimum of two people or a mechanical lift when lifting the server. Attempting this procedure alone could result in personal injury or equipment damage.

- a. Align the rear of the inner rails that are attached to the server sides with the front ends of the empty slide rails on the rack.
- b. Push the server into the slide rails until it stops at the internal stops.
- c. Slide the release clip toward the rear on both inner rails, and then continue pushing the server into the rack until its front slam latches engage with the rack posts.

**Figure 2-4** Inner Rail Release Clip

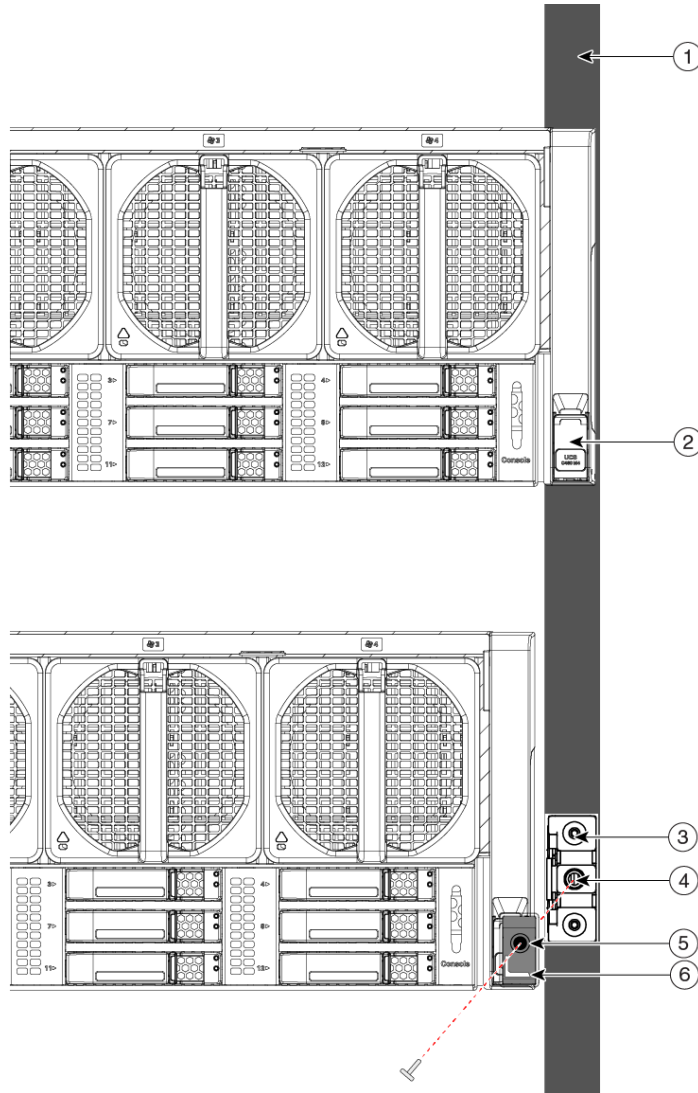


<b>1</b>	Inner rail release clip	<b>3</b>	Outer rail attached to rack post
<b>2</b>	Inner rail attached to server		

**Step 5** (Optional) Secure the server in the rack more permanently by using the two screws that are provided with the slide rails. Perform this step if you plan to move the rack with servers installed (see [Figure 2-5](#)).

With the server fully pushed into the slide rails, open a hinged slam latch lever on the front of the server and insert the screw through the hole that is under the lever. The screw threads into the static part of the rail on the rack post and prevents the server from being pulled out. Repeat for the opposite slam latch.

Figure 2-5 Optional Securing Screws



1	Rack post	4	Screw hole on front end of slide rail
2	Slam latch on server (closed)	5	Screw hole on slam latch when open
3	Front end of slide rail on rack post	6	Slam latch on server (open)



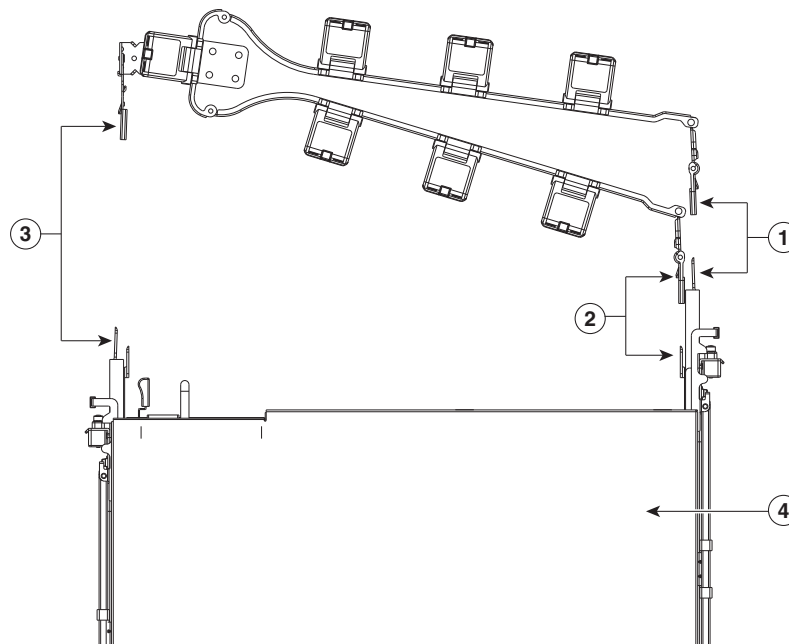
## Installing the Cable Management Arm (Optional)



**Note** The CMA is reversible left to right. To reverse the CMA, see [Reversing the Cable Management Arm \(Optional\)](#), page 2-10 before installation.

- Step 1** With the server pushed fully into the rack, slide the CMA tab of the CMA arm that is farthest from the server onto the end of the stationary slide rail that is attached to the rack post (see [Figure 2-6](#)). Slide the tab over the end of the rail until it clicks and locks.
- Step 2** Slide the CMA tab that is closest to the server over the end of the inner rail that is attached to the server (see [Figure 2-6](#)). Slide the tab over the end of the rail until it clicks and locks.
- Step 3** Pull out the width-adjustment slider that is at the opposite end of the CMA assembly until it matches the width of your rack (see [Figure 2-6](#)).
- Step 4** Slide the CMA tab that is at the end of the width-adjustment slider onto the end of the stationary slide rail that is attached to the rack post (see [Figure 2-6](#)). Slide the tab over the end of the rail until it clicks and locks.
- Step 5** Open the hinged flap at the top of each plastic cable guide and route your cables through the cable guides as desired.

**Figure 2-6** Attaching the Cable Management Arm to the Rear of the Slide Rails

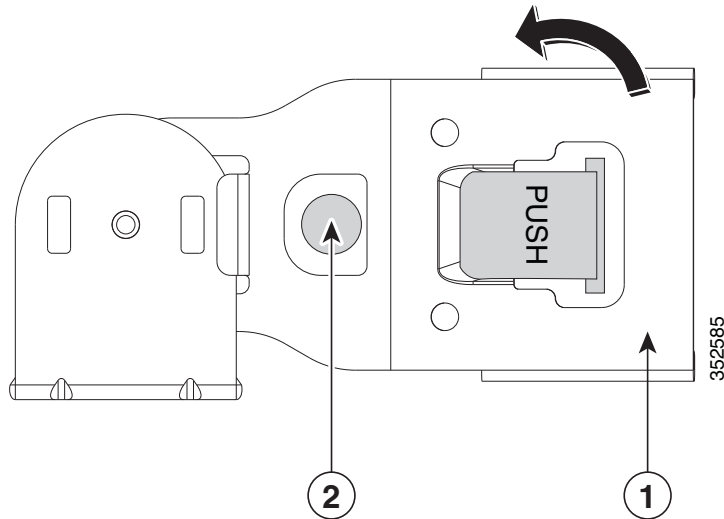


<b>1</b>	CMA tab on arm farthest from server and end of stationary outer slide rail	<b>3</b>	CMA tab on width-adjustment slider and end of stationary outer slide rail
<b>2</b>	CMA tab on arm closest to the server and end of inner slide rail attached to server	<b>4</b>	Rear of server

## Reversing the Cable Management Arm (Optional)

- Step 1** Rotate the entire CMA assembly 180 degrees. The plastic cable guides must remain pointing upward.
- Step 2** Flip the tabs at the end of each CMA arm so that they point toward the rear of the server.
- Step 3** Pivot the tab that is at the end of the width-adjustment slider. Depress and hold the metal button on the outside of the tab and pivot the tab 180 degrees so that it points toward the rear of the server.

**Figure 2-7** Reversing the CMA



<b>1</b>	CMA tab on end of width-adjustment slider	<b>2</b>	Metal button for rotating
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# Initial Server Setup

This section includes the following topics:

- [Connecting and Powering on the Server \(Standalone Mode\)](#), page 2-11
- [NIC Modes and NIC Redundancy Settings](#), page 2-14

## Connecting and Powering on the Server (Standalone Mode)

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 a Cisco UCS integration, specific cabling and settings are required. See [Installation for Cisco UCS Integration](#), page E-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 (Cisco IMC). If you want to use the 10/100 dedicated management ports to access the Cisco IMC, you can connect to the server and change the NIC mode as described in [Step 4](#) of the following procedure. In that step, you can also change the NIC redundancy and set static IP settings.

**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-3 for power specifications.

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

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

- Off—No AC power is present in the server.
- Amber—The server is in standby power mode. Power is supplied only to the Cisco IMC 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 no external USB devices are 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 a 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 connecting the supplied KVM cable 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**

Connect Ethernet cables to the server ports or card ports that you want to use.

- Step 4** Set NIC mode and NIC redundancy, and choose whether to enable DHCP or set static network settings:
- a. Press the **Power** button to boot the server. Watch for the prompt to press F8.
  - b. During bootup, press **F8** when prompted to open the BIOS Cisco IMC Configuration Utility.

**Note**


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The first time that you enter the Cisco IMC Configuration Utility, you are prompted to change the default password. The default password is *password*. The Strong Password feature is enabled.

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The following are the requirements for Strong Password:

- The password can have minimum 8 characters; maximum 14 characters.
- The password must not contain the user's name.
- The password must contain characters from three of the following four categories:
  - English uppercase letters (A through Z).
  - English lowercase letters (a through z).
  - Base 10 digits (0 through 9).
  - Non-alphabetic characters !, @, #, \$, %, ^, &, \*, -, \_, =, “
- c. Set the NIC mode to your choice for which ports to use to access the Cisco IMC 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, which is the factory default. This default includes Active-active NIC redundancy with 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 Cisco IMC through a Cisco card in standalone mode.

- Dedicated—The 1-Gb dedicated management port is used to access the Cisco IMC. You must select a NIC redundancy and IP setting.
- Shared LOM—The 1-Gb Ethernet ports are used to access the Cisco IMC. You must select a NIC redundancy and IP setting.
- Shared LOM 10G—The 10 Gb Ethernet ports are used to access the Cisco IMC. 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 Cisco IMC. You must select a NIC redundancy and IP setting.

**Note**


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Cisco Card NIC mode is currently supported only with a Cisco UCS VIC that is installed in PCIe slot 5 or 10. See also [Special Considerations for Cisco UCS Virtual Interface Cards, page 3-54](#).

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- d. Use this utility to change the NIC redundancy to your preference. This server has three possible NIC redundancy settings:
  - 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 used simultaneously. See [NIC Modes and NIC Redundancy Settings, page 2-14](#) for more information.

- e. Choose whether to enable DHCP for dynamic network settings or to enter static network settings.



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**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 that are assigned to the Cisco IMC. The MAC address printed on the label is the beginning of the range of six contiguous MAC addresses.

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- f. (Optional) Use this utility to make VLAN settings and to set a default Cisco IMC user password.



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

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



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

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- Step 5** Use a browser and the IP address of the Cisco IMC to connect to the Cisco IMC Setup Utility. The IP address is based upon the settings that you made in [Step 4](#) (either a static address or the address assigned by your DHCP server).



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**Note** The default username for the server is *admin*. The default password is *password*.

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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>

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# NIC Modes and NIC Redundancy Settings

## NIC Modes

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

- **Shared LOM EXT (default)**—This is shared LOM extended mode, which is the factory default. This default includes Active-active NIC redundancy with 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 Cisco IMC through a Cisco card in standalone mode.

- **Dedicated**—The 1-Gb dedicated management port is used to access the Cisco IMC. You must select a NIC redundancy and IP setting.
- **Shared LOM**—The 1-Gb Ethernet ports are used to access the Cisco IMC. You must select a NIC redundancy and IP setting.
- **Shared LOM 10G**—The 10 Gb Ethernet ports are used to access the Cisco IMC. 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 Cisco IMC. You must select a NIC redundancy and IP setting.

## NIC Redundancy

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 used simultaneously.

The active/active setting uses Mode 5 or Balance-TLB (adaptive transmit load balancing). This channel bonding 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 Cisco IMC Firmware

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

- [Updating the BIOS and Cisco IMC Firmware, page 2-15](#)
- [Accessing the System BIOS, page 2-16](#)

## Updating the BIOS and Cisco IMC Firmware



### Caution

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When you upgrade the BIOS firmware, you must also upgrade the Cisco IMC firmware to the same version or the server does not boot. Do not power off the server until the BIOS and Cisco IMC firmware match or the server does not boot. The Cisco Host Upgrade Utility (HUU) simultaneously upgrades the BIOS, Cisco IMC, and other firmware to compatible levels.

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

- We recommend that you use the Cisco Host Upgrade Utility to simultaneously upgrade the Cisco IMC, BIOS, LOM, LSI storage controller, and Cisco UCS VIC firmware to compatible levels.

See the *Cisco Host Upgrade Utility Quick Reference Guide* for your firmware level at the documentation roadmap link that is listed in this section.

- You can upgrade the BIOS using the EFI interface or from a Windows or Linux platform.

See the *Cisco UCS C-Series Rack-Mount Server BIOS Upgrade Guide*.

- You can upgrade the Cisco IMC firmware by using the Cisco IMC GUI interface.

See the *Cisco UCS C-Series Rack-Mount Server Configuration Guide*.

- You can upgrade the Cisco IMC firmware by using the Cisco IMC 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



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**Note** Details about the BIOS settings are displayed on the BIOS windows.

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



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

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**Step 2** Use the arrow keys to select the BIOS menu window.

**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 window is displayed.

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

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