

Cisco Secure Network Server 3700 Series Appliance Hardware Installation Guide

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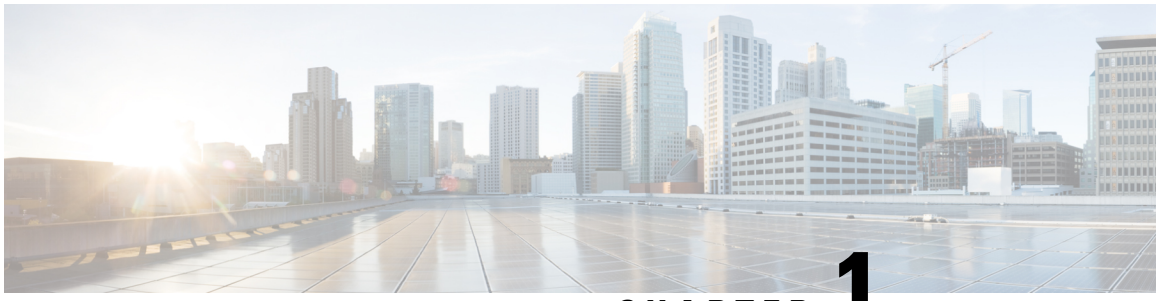
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CHAPTER 1

Cisco Secure Network Server 3700 Series Appliance Overview

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Cisco Secure Network Server 3700 Series Appliances

The Cisco Secure Network Server (SNS) 3700 series appliances are based on the Cisco Unified Computing System (Cisco UCS) C220 Rack Server and are configured specifically to support Cisco Identity Services Engine (ISE). Cisco SNS 3700 series appliances are designed to deliver high performance and efficiency for a wide range of workloads.

The Cisco SNS 3700 series appliances are available in the following models:

- Cisco SNS 3715 (SNS-3715-K9)
- Cisco SNS 3755 (SNS-3755-K9)
- Cisco SNS 3795 (SNS-3795-K9)

The Cisco SNS 3715 appliance is designed for small deployments, while Cisco SNS 3755 and Cisco SNS 3795 appliances have several redundant components such as hard disks and power supplies and are suitable for larger deployments that require highly reliable system configurations. Cisco SNS 3795 is recommended for PAN and MnT personas.

Cisco ISE Release 3.1 Patch 6 and above and Cisco ISE Release 3.2 Patch 2 and above versions support Cisco SNS 3700 series appliances.

Cisco SNS 3700 Series Appliance Hardware Specifications

The following table describes the hardware specifications of Cisco SNS 3700 series appliances.

Table 1: Cisco SNS 3700 Series Appliance Hardware Specifications

Cisco SNS 3700 Series Appliance	Hardware Specifications
Cisco SNS-3715-K9	• Cisco UCS C220 M6 • Intel Xeon Silver 4310 CPU 2.10 GHz • 12 CPU Cores, 24 Threads • 32-GB RAM • 1 x 600-GB HDD or 1 x 800-GB SSD or 1 x 960-GB SED • RAID-0 • 2 x 10Gbase-T 4 x 10GE SFP • For physical, environmental, and power specifications, see , on page 31
Cisco SNS-3755-K9	• Cisco UCS C220 M6 • Intel Xeon Silver 4316 CPU 2.30 GHz • 20 CPU Cores, 40 Threads • 96-GB RAM • 4 x 600-GB HDD or 4 x 800-GB SSD or 4 x 960-GB SED • RAID 10 • 2 x 10Gbase-T 4 x 10GE SFP • For physical, environmental, and power specifications, see , on page 31

Cisco SNS 3700 Series Appliance	Hardware Specifications
Cisco SNS-3795-K9	• Cisco UCS C220 M6 • Intel Xeon Silver 4316 CPU 2.30 GHz • 20 CPU Cores, 40 Threads • 256-GB RAM • 8 x 600-GB HDD or 8 x 800-GB SSD or 8 x 960-GB SED • RAID 10 • 2 x 10Gbase-T 4 x 10GE SFP • For physical, environmental, and power specifications, see , on page 31

Note

- You cannot add additional hardware resources such as memory, processor, or hard disk to a Cisco SNS 3700 series appliance.
- Mixing Serial Attached SCSI (SAS) and Serial Advanced Technology Attachment (SATA) hard drives or SAS and SATA solid-state drives (SSDs) is not supported. You must use either SAS or SATA hard drives or SAS or SATA SSDs.
- SSD offers improved performance in disk read/write operations and other ISE operations such as boot, installation, upgrade database-intensive tasks such as backup, reports generation, and so on.

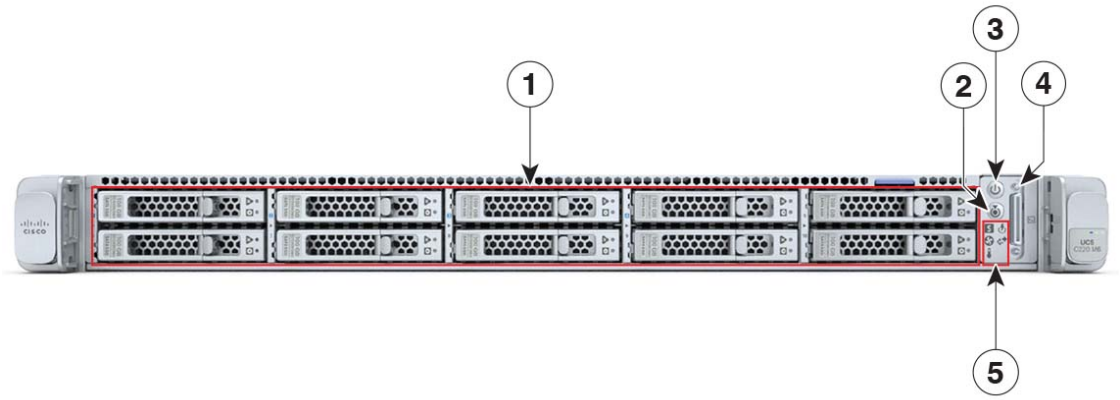
External Features

This section describes the external features of a Cisco SNS 3700 series appliance.

Cisco SNS 3700 Series Appliance Front Panel Features

The following figure shows the front panel features of Cisco SNS 3700 series appliance.

Figure 1: Cisco SNS 3700 Series Appliance Front Panel

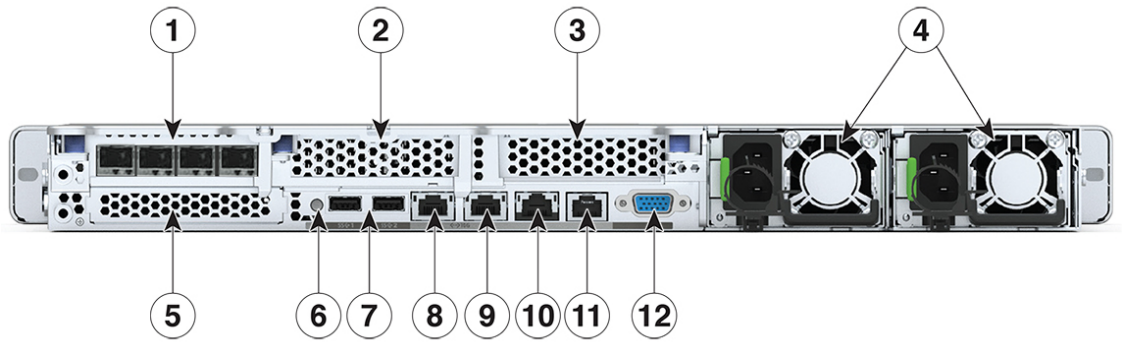


1	Drive bays 1 – 10 support Serial Attached SCSI (SAS) and Serial Advanced Technology Attachment (SATA) hard disk drives (HDDs), solid-state drives (SSDs), and self-encrypting drives (SEDs). As an option, drive bays 1 – 4 can contain up to four Non-Volatile Memory express (NVMe) drives. Drive bays 5 – 10 support SAS and SATA HDDs, SSDs, and SEDs. NVMe drives are supported only for dual CPU servers.	**2**	Unit identification button or LED
3	Power button or power status LED	**4**	KVM connector (used with KVM cable that provides one DB-15 VGA, one DB-9 serial, and two USB 2.0 connectors)
5	System LED cluster: • Fan status LED • System status LED • Power supply status LED • Network link activity LED • Temperature status LED For definitions of LED states, see Front Panel LEDs, on page 6.		—

Cisco SNS 3700 Series Appliance Rear Panel Features

The following figure shows the rear panel features of a Cisco SNS 3700 series appliance.

Figure 2: Cisco SNS 3700 Series Appliance Rear Panel



1	Riser 1 supports SFP NIC card Four Ethernet ports that are mapped to the following Cisco ISE GigabitEthernet interfaces: • GigabitEthernet 2 interface • GigabitEthernet 3 interface • GigabitEthernet 4 interface • GigabitEthernet 5 interface **Note** The interface labelling is from right to left.	**2**	Riser 2 blanking panel
3	Riser 3 blanking panel	**4**	Power supply units (PSUs)
5	Modular LAN on motherboard (mLOM)	**6**	System identification button or LED
7	USB 3.0 ports (two)	**8-9**	Dual 1-Gb or 10-Gb Ethernet ports (LAN1 and LAN2): • LAN1 (linked to Cisco ISE GigabitEthernet 0 interface) • LAN2 (linked to Cisco ISE GigabitEthernet 1 interface) **Note** The interface labelling is from left to right.
10	1-Gb Ethernet dedicated management port	**11**	COM port (RJ45 connector)
12	VGA video port (DB-15 connector)		—

Status LEDs and Buttons

This section contains information for interpreting LED states.

Front Panel LEDs

The following figure shows the front panel LEDs of a Cisco SNS 3700 series appliance.

Figure 3: Front Panel LEDs

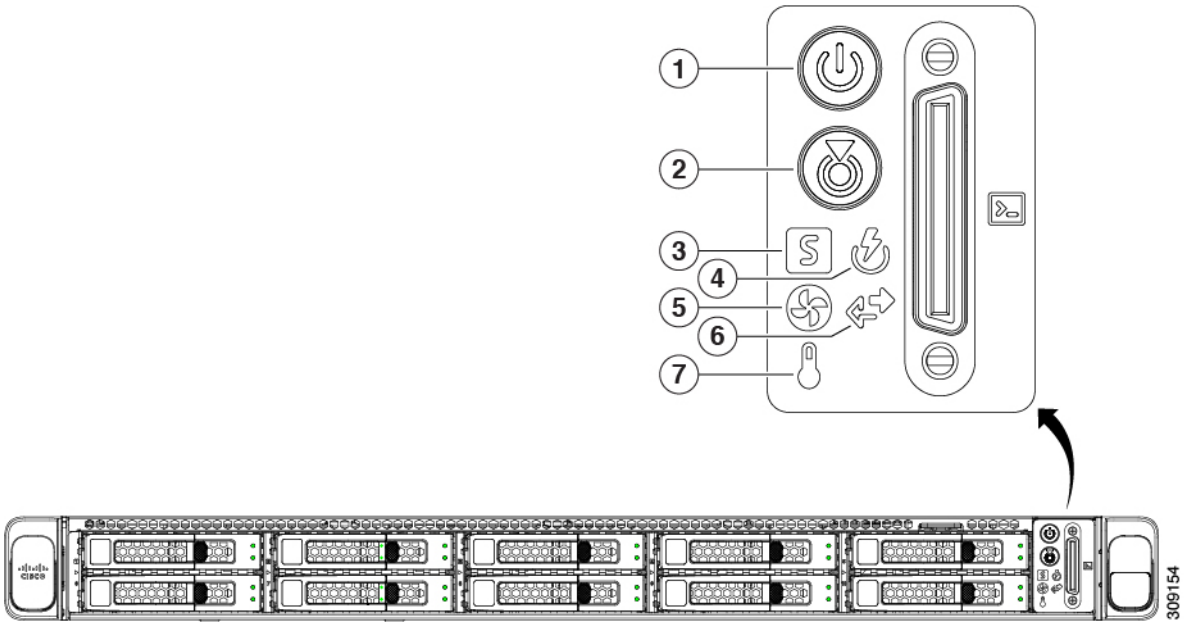


Table 2: Front Panel LEDs

	LED Name	States
1	Power button or LED ( )	• Off: There is no AC power to the server. • Amber: The server is in standby power mode. Power is supplied only to Cisco Integrated Management Controller (Cisco IMC) and some motherboard functions. • Green: The server is in main power mode. Power is supplied to all server components.
2	Unit identification	• Off: The unit identification function is not in use. • Blue, blinking: The unit identification function is activated.

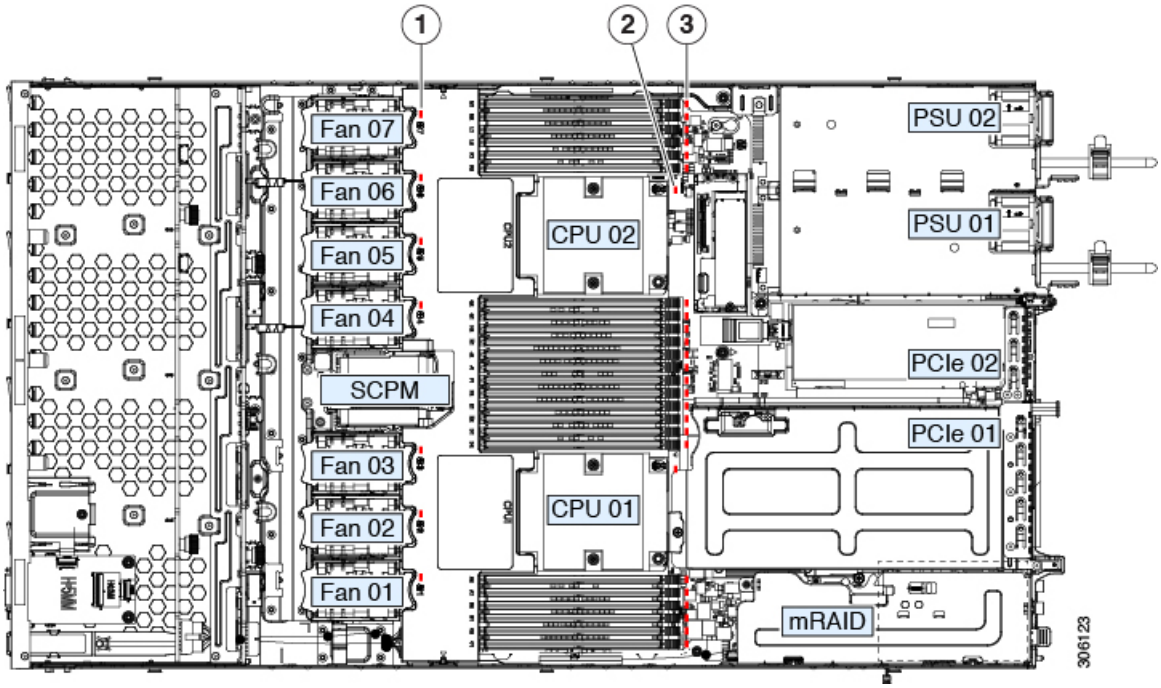
3	System health ()	• Green: The server is running in normal operating condition.
		• Green, blinking: The server is performing system initialization and memory check.
		• Amber, steady: The server is in a degraded operational state (minor fault). For example:
		  • Power supply redundancy is lost.
		  • CPUs are mismatched.
		  • At least one CPU is faulty.
		  • At least one DIMM is faulty.
		  • At least one drive in a RAID configuration failed.
		• Amber, 2 blinks: There is a major fault with the system board.
		• Amber, 3 blinks: There is a major fault with the memory DIMMs.
		• Amber, 4 blinks: There is a major fault with the CPUs.

4	Power supply status ()	• Green: All power supplies are operating normally. • Amber, steady: One or more power supplies are in a degraded operational state. • Amber, blinking: One or more power supplies are in a critical fault state.
5	Fan status ()	• Green: All fan modules are operating properly. • Amber, blinking: One or more fan modules have breached the nonrecoverable threshold.
6	Network link activity ()	• Off: The Ethernet LAN on motherboard (LOM) port link is idle. • Green: One or more Ethernet LOM ports are link-active, but there is no activity. • Green, blinking: One or more Ethernet LOM ports are link-active, with activity.
7	Temperature status ()	• Green: The server is operating at normal temperature. • Amber, steady: One or more temperature sensors have breached the critical threshold. • Amber, blinking: One or more temperature sensors have breached the nonrecoverable threshold.

Internal Diagnostic LEDs

The server has internal fault LEDs for CPUs, DIMMs, and fan modules.

Figure 4: Internal Diagnostic LED Locations

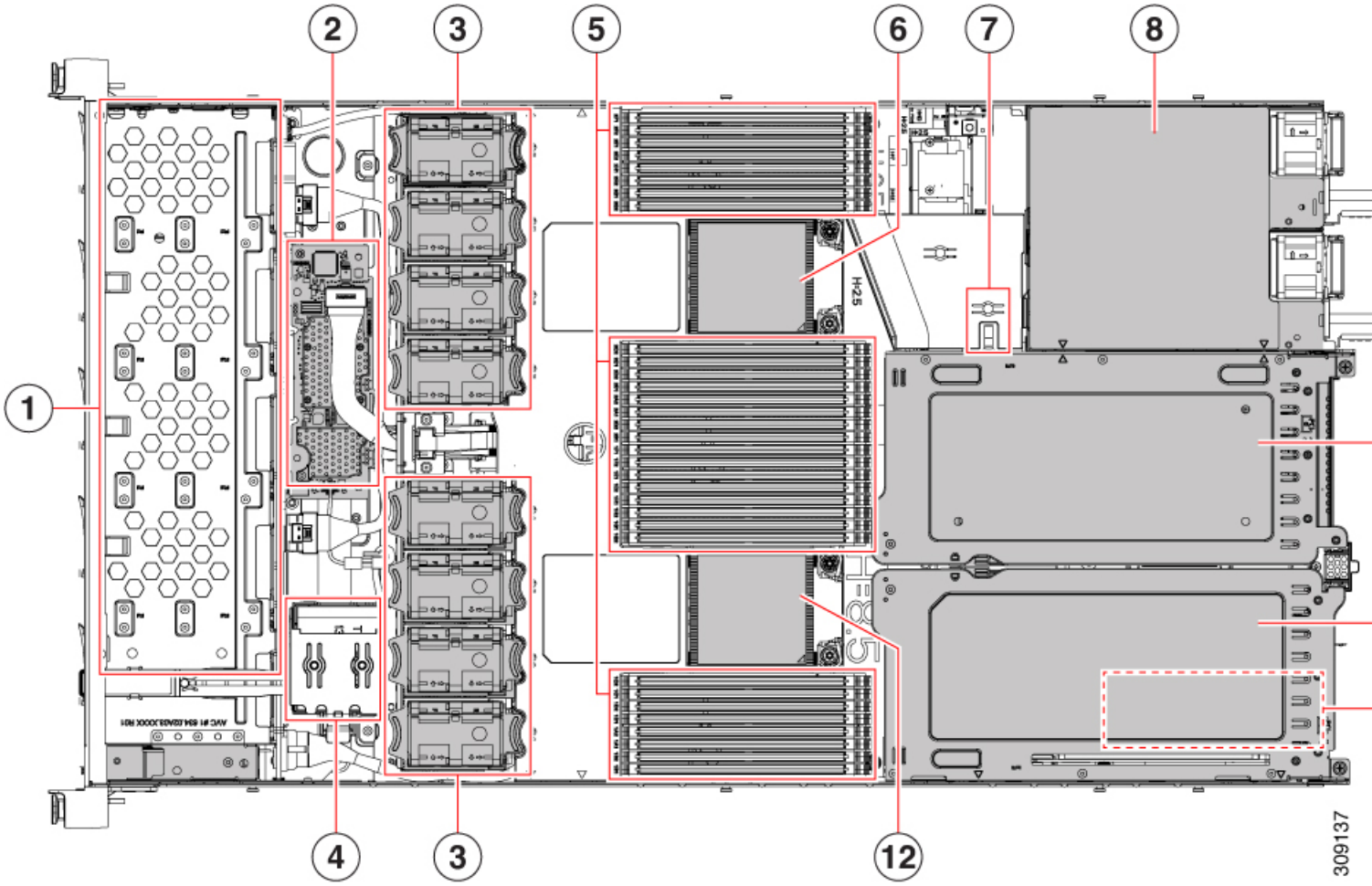


1	Fan module fault LEDs (one behind each fan connector on the motherboard) • Amber: Fan has a fault or is not fully seated. • Green: Fan is OK.	**3**	DIMM fault LEDs (one behind each DIMM socket on the motherboard) These LEDs operate only when the server is in standby power mode. • Amber: DIMM has a fault. • Off: DIMM is OK.
2	CPU fault LEDs (one behind each CPU socket on the motherboard). These LEDs operate only when the server is in standby power mode. • Amber: CPU has a fault. • Off: CPU is OK.		—

Serviceable Component Locations

This section describes the field-replaceable components and service-related items. The following figure shows an appliance with the top cover removed.

Figure 5: Serviceable Component Locations



1	Front-loading drive bays 1–10 support SAS or SATA drives	**2**	M6 modular RAID card or SATA Interposer card
3	Cooling fan modules (eight) Each fan is hot-swappable	**4**	SuperCap module mounting bracket The SuperCap module that mounts into this location provides RAID write-cache backup.

5	DIMM sockets on motherboard (32 total, 16 per CPU) Eight DIMM sockets are placed between the CPUs and the server sidewall, and 16 DIMM sockets are placed between the two CPUs.	**6**	Motherboard CPU socket (CPU2)
7	M.2 module connector Supports a boot-optimized RAID controller with connectors for up to two SATA M.2 SSDs	**8**	Power Supply Units (PSUs)
9	Riser 2 blanking panel **Note** Riser 3 blanking panel is not shown in this figure.	**10**	Riser 1 supports SFP NIC card
11	Modular LOM (mLOM) card bay on chassis floor (x16 PCIe lane) The mLOM card bay is below PCIe riser slot 1.	**12**	Motherboard CPU socket (CPU1)

Summary of Server Features

The following table lists a summary of server features.

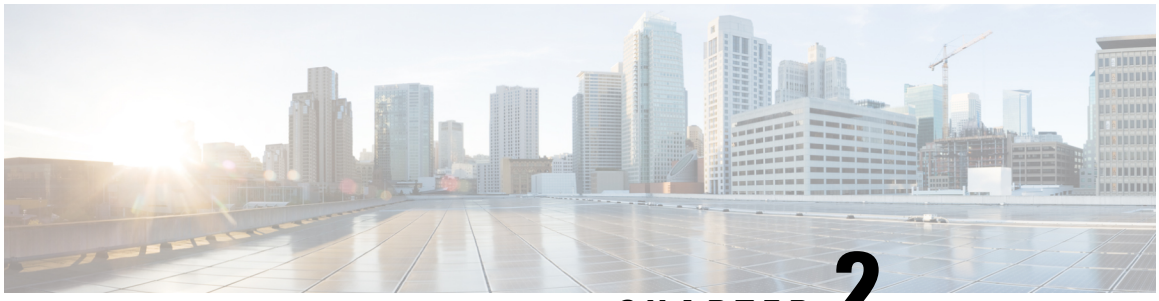
Feature	Description
Chassis	One rack-unit (1RU) chassis
Central Processor	Up to two 3rd Generation Intel Xeon processors
Memory	32 slots for registered DIMMs (RDIMMs), DDR4 DIMMs, 3DS DIMMs, and load-reduced DIMMs (LR DIMMs) up to 3200 MHz. Also supports Intel Optane Persistent Memory Modules (PMEMs)
Multi-bit error protection	Supports multi-bit error protection
Video	The Cisco Integrated Management Controller (Cisco IMC) provides video using the Matrox G200e video or graphics controller: • Integrated 2D graphics core with hardware acceleration • DDR3 memory interface supports up to 512 MB of addressable memory (8 MB is allocated by default to video memory) • Supports display resolutions up to 1920 x 1200 16bpp at 60Hz • High-speed integrated 24-bit RAMDAC • Single-lane PCI-Express host interface running at Gen 2 speed

Feature	Description
Baseboard management	BMC, running Cisco IMC firmware. Depending on your Cisco IMC settings, Cisco IMC can be accessed through the 1-Gb dedicated management port, the 1-Gb/10-Gb Ethernet LAN ports, or a Cisco virtual interface card.
Network and management I/O	Rear panel: • One 1-Gb Ethernet dedicated management port (RJ-45 connector) • Two 1-Gb or 10-Gb BASE-T Ethernet LAN ports (RJ-45 connectors) The dual LAN ports can support 10 Gbps, 1 Gbps, 100 Mbps, or 10 Mbps. The LAN ports autonegotiate to the correct link speed based on the link partner capability. • One RS-232 serial port (RJ-45 connector) • One VGA video connector port (DB-15 connector) • Two USB 3.0 ports Front panel: • One front-panel keyboard/video/mouse (KVM) connector that is used with the KVM breakout cable. The breakout cable provides two USB 2.0, one VGA, and one DB-9 serial connector.
Modular LOM	One dedicated socket (x16 PCIe lane) that can be used to add an mLOM card for additional rear-panel connectivity. As an optional hardware configuration, the Cisco CNIC mLOM module supports two 100G QSFP+ ports or four 25 Gbps Ethernet ports.
Power	• 1050 W (AC) • 1050 W (DC)
ACPI	Supports advanced configuration and power interface (ACPI) 4.0 standard
Front Panel	The front panel provides status indications and control buttons
Cooling	Eight hot-swappable fan modules for front-to-rear cooling
InfiniBand	In addition to Fibre Channel, Ethernet, and other industry-standards, the PCI slots in this server support the InfiniBand architecture.

Feature	Description

Interfaces	Rear panel:
	• One 1G base-T RJ-45 ? management port
	• Two 10G base-T LOM ports
	• One RS-232 serial port (RJ45 connector)
	• One DB15 VGA connector
	• Two USB 3.0 port connectors
	• One flexible modular LAN on motherboard (mLOM) slot that can accommodate various interface cards
	Front panel:
	• One KVM console connector, which supplies the pins for a KVM breakout cable that supports the following:
	  • Two USB 2.0 connectors
	  • One VGA DB15 video connector
	  • One serial port (RS232) RJ45 connector

Integrated Management Processor	Baseboard Management Controller running Cisco IMC firmware. Depending on your Cisco IMC settings, Cisco IMC can be accessed through the 1-GE dedicated management port, the 1GE/10GE LOM ports, or a Cisco virtual interface card (VIC).
Storage Controllers	The appliance has a dedicated internal mRAID riser that supports a PCIe-style Cisco modular RAID controller card (SAS/SATA).
Modular LAN over Motherboard (mLOM) slot	The dedicated mLOM slot on the motherboard can accommodate the following cards: • Cisco Virtual Interface Cards (VICs) • Quad Port Intel i350 1GbE RJ45 Network Interface Card (NIC)



CHAPTER 2

Installing the Appliance

- Installation Warnings and Guidelines, on page 13
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- Setting Up the System with the Cisco IMC Configuration Utility, on page 23
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- Configuring RAID Controller During Initial Setup or After Replacing HDD or SSD, on page 27
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Installation Warnings and Guidelines



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



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

Warning **This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock, and key, or other means of security.**

Statement 1017

Caution Rack the appliance using rail kits to ensure proper airflow. Physically placing the units on top of one another or stacking them without the use of rail kits, blocks the air vents on top of the servers, which could result in overheating, higher fan speeds, and higher power consumption. We recommend that you mount your servers on rail kits while installing on the rack because these rails provide the minimal spacing required between the servers. No additional spacing between the servers is required when you mount the units using rail kits.

Follow these guidelines while installing the appliance:

- Ensure that there is adequate space around the appliance to allow for easy access and adequate airflow.
- Ensure that the air-conditioning meets the thermal requirements listed in Environmental Specifications, on page 31.
- Ensure that the cabinet or rack meets the requirements listed in Rack Requirements, on page 14.
- Ensure that the site power meets the power requirements listed in Power Specifications, on page 32. You can use an uninterruptible power supply (UPS) to protect against power failures.

Rack Requirements

The rack must be of the following type:

- A standard 19-inch (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 Cisco-supplied slide rails.
- The minimum vertical rack space per server must be one rack unit (RU), equal to 1.75 inch (44.45 mm).

Rack Installation Tools Required

The slide rails sold by Cisco Systems for this appliance do not require tools for installation.

Slide Rail and Cable Management Arm Dimensions

The slide rails for this appliance have an adjustment range of 24 to 36 inches (610 to 914 mm).

The optional cable management arm (CMA) adds additional length requirements:

- The additional distance from the rear of the server to the rear of the CMA is 5.4 inches (137.4 mm).
- The total length of the server, including the CMA, is 35.2 inches (894 mm).

Installing the Appliance in a Rack

This section describes how to install the appliance in a rack using the supported rail kit that is sold by Cisco.



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.

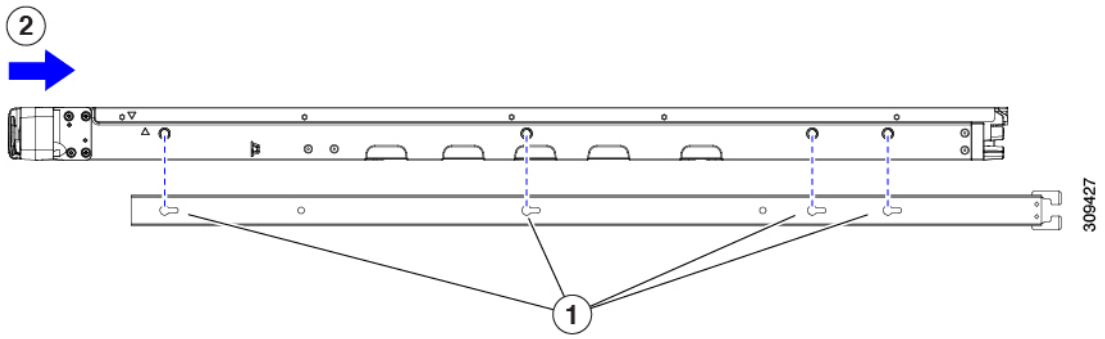
Statement 1006

Procedure

Step 1 Attach the inner rails to the sides of the appliance:

a) Align an inner rail with one side of the appliance so that the three keyed slots in the rail align with the three pegs on the side of the appliance.
b) Set the keyed slots over the pegs, and then slide the rail toward the front to lock it in place on the pegs.
c) Install the second inner rail to the opposite side of the appliance.

Figure 6: Attaching the Inner Rail to the Side of the Appliance

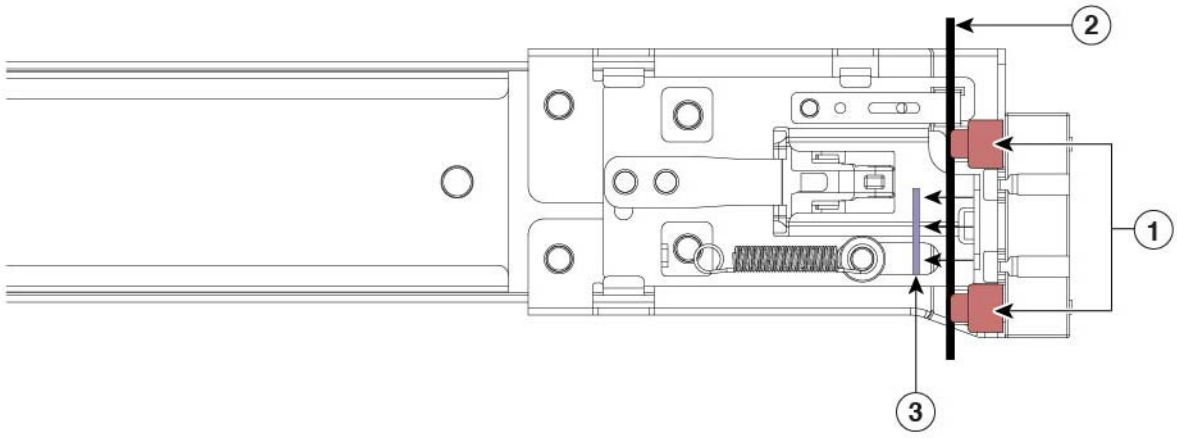


1	Keyed slots in rail	**2**	Front of appliance slides into keyed slots

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.

Outside the assembly, push the green-arrow button toward the rear to open the securing plate.

Figure 7: Front Securing Mechanism, Inside of Front End



1	Front mounting pegs	**3**	Securing plate shown pulled back to the open position
2	Rack post between mounting pegs and opened securing plate	-	

Step 3 Install the outer 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.

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 from the outside-front.
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.

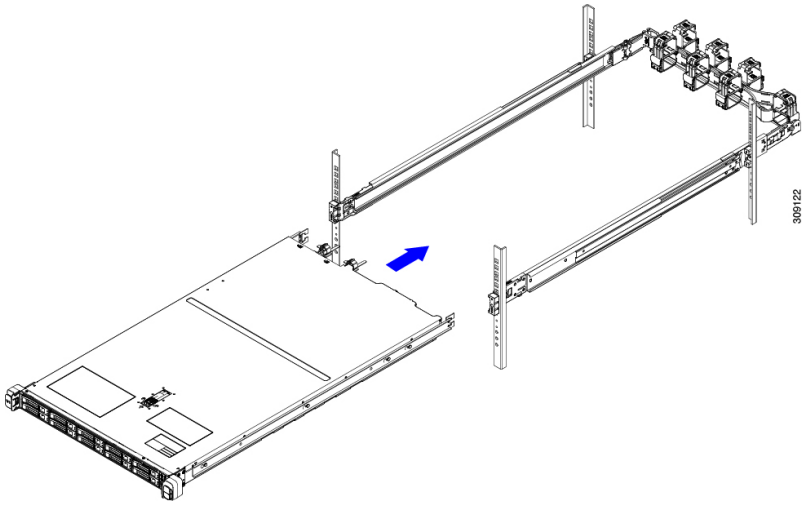
   The rear mounting pegs enter the rear rack-post holes from the inside of the rack post.

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 and are level front-to-back.
f) Pull the inner slide rails on each assembly, toward the rack front until they hit the internal stops and lock in place.

Step 4 Insert the appliance into the slide rails:

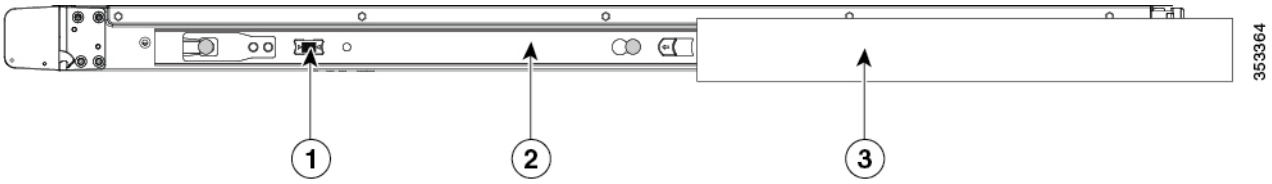
Caution
This appliance can weigh up to 60 pounds (27 kilograms) when fully loaded with components. We recommend that you use a minimum of two people or a mechanical lift when lifting the appliance. Attempting this procedure alone could result in personal injury or equipment damage.

a) Align the rear ends of the inner rails that are attached to the appliance sides with the front ends of the empty slide rails on the rack.
b) Push the inner rails into the slide rails on the rack until they stop at the internal stops.



c) Slide the inner-rail release clip toward the rear on both inner rails, and then continue pushing the appliance into the rack until its front slam latches engage with the rack posts.

Figure 8: Inner-Rail Release Clip



1	Inner-rail release clip	**3**	Outer slide rail attached to rack post
2	Inner rail attached to appliance and inserted into outer slide rail	-	

Step 5 (Optional) Secure the appliance 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 the appliance installed.

With the appliance fully pushed into the slide rails, open a hinged slam latch lever on the front of the appliance and insert a 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 appliance from being pulled out. Repeat for the opposite slam latch.

Step 6 (Optional) If applicable, do the following:

a) Attach the cable management arm. See Installing the Cable Management Arm (Optional), on page 18 or Reversing the Cable Management Arm (Optional), on page 20.

b) Attach the locking bezel.

Installing the Cable Management Arm (Optional)

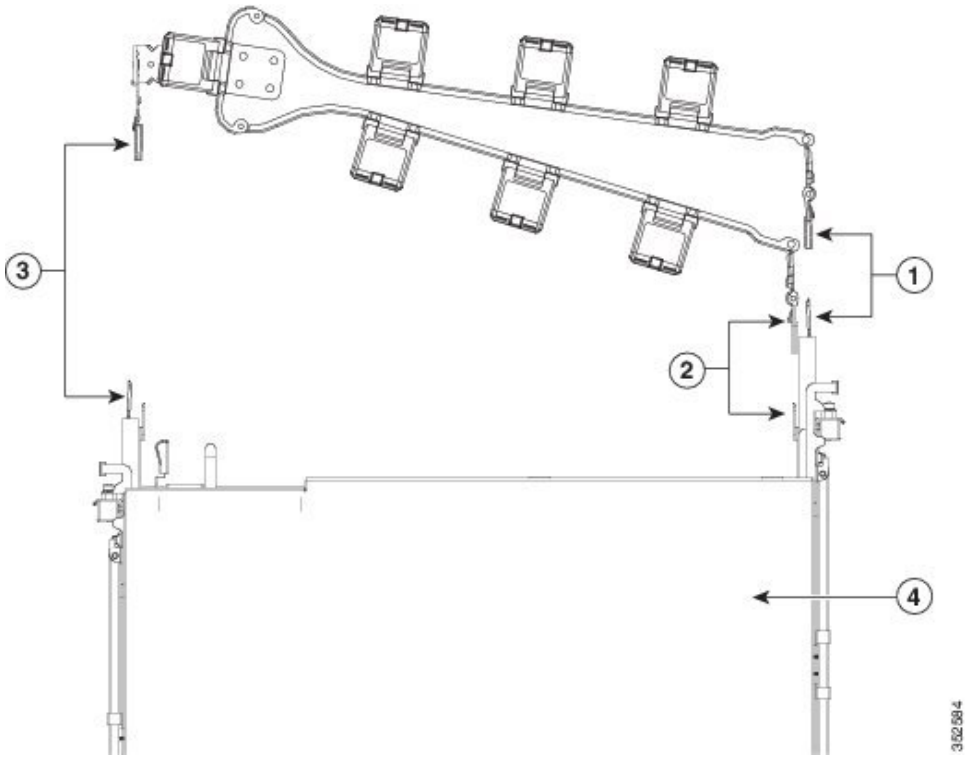


Note The cable management arm (CMA) is reversible left-to-right. To reverse the CMA, see Reversing the Cable Management Arm (Optional), on page 20 before installation.

Procedure

Step 1 With the appliance pushed fully into the rack, slide the CMA tab of the CMA arm that is farthest from the appliance onto the end of the stationary slide rail that is attached to the rack post. Slide the tab over the end of the rail until it clicks and locks.

Figure 9: Attaching the CMA to the Rear Ends of the Slide Rails



1	CMA tab on arm farthest from appliance attaches to end of stationary outer slide rail.	**3**	CMA tab on width-adjustment slider attaches to end of stationary outer slide rail.
2	CMA tab on arm closest to the appliance attaches to end of inner slide rail attached to appliance.	**4**	Rear of appliance

Step 2 Slide the CMA tab, which is closest to the appliance, over the end of the inner rail that is attached to the appliance. 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.

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. 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 required.

Reversing the Cable Management Arm (Optional)

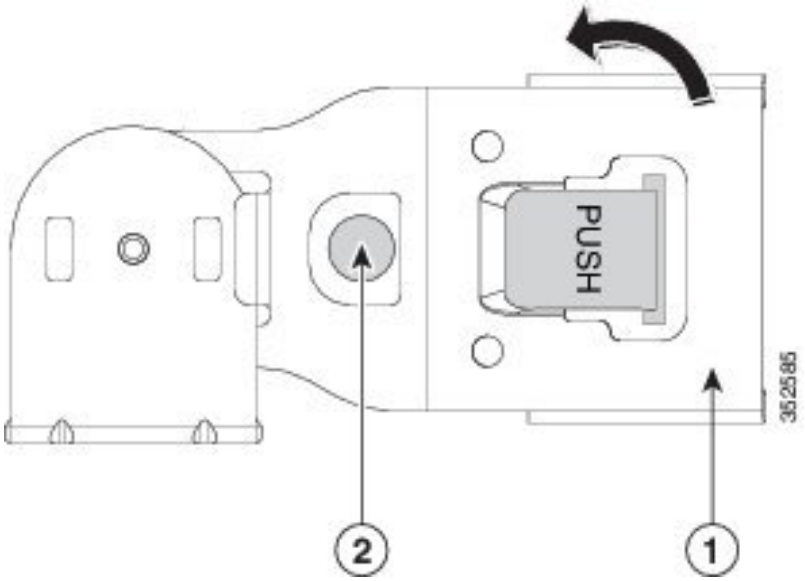
Procedure

Step 1 Rotate the entire CMA assembly 180 degrees, left-to-right. The plastic cable guides must remain pointing upward.

Step 2 Flip the tabs at the ends of the CMA arms so that they point toward the rear of the appliance.

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 appliance.

Figure 10: Reversing the CMA



1	CMA tab at the end of width-adjustment slider	**2**	Metal button outside the tab

Initial Setup

This section describes how to connect to the system for initial setup.

Appliance Default Settings

The appliance is shipped with these default settings:

- The NIC mode is *Shared LOM EXT*.

  Shared LOM EXT mode enables the 1-Gb or10-Gb Ethernet ports and the ports on any installed Cisco virtual interface card (VIC) to access the Cisco Integrated Management Interface (Cisco IMC). To use the 10/100/1000 dedicated management ports to access Cisco IMC, you can connect to the appliance

and change the NIC mode as described in Setting Up the System with the Cisco IMC Configuration Utility, on page 23.

For information about the browsers that are supported for Cisco IMC, see *Release Notes for Cisco UCS E-Series M6 Servers*.

- The NIC redundancy is *Active-Active*. All Ethernet ports are utilized simultaneously.
- DHCP is enabled.
- IPv4 is enabled.

Connection Methods

There are two methods for connecting to the system for initial setup:

- Local setup: Use this procedure to connect a keyboard and monitor directly to the system for setup. This procedure can use a KVM cable or the ports at the rear of the appliance.
- Remote setup: Use this procedure to perform setup through your dedicated management LAN.

Note To configure the system remotely, you must have a DHCP server on the same network as the system. Your DHCP server must be preconfigured with the range of MAC addresses for this server node. The MAC address is printed on a label that is on the pull-out asset tag on the front panel. This server node has a range of six MAC addresses assigned to the Cisco IMC. The MAC address printed on the label is the beginning of the range of six contiguous MAC addresses.

Connecting to the Appliance Locally for Setup

This procedure requires the following equipment:

- VGA monitor
- USB keyboard
- Either the supported Cisco KVM cable or a USB cable and VGA DB-15 cable

Procedure

Step 1 Attach a power cord to each power supply in your appliance, and then attach each power cord to a grounded power outlet.

Wait for approximately two minutes for the appliance to boot to standby power during the initial setup. You can verify the system's power status by looking at the system Power Status LED on the front panel. The system is in standby power mode when the LED is amber.

Step 2 Connect a USB keyboard and VGA monitor to the appliance using one of the following methods:

- Connect an optional KVM cable to the KVM connector on the front panel. Connect your USB keyboard and VGA monitor to the KVM cable.

- Connect a USB keyboard and VGA monitor to the corresponding connectors on the rear panel.

Step 3 Open the Cisco IMC Configuration Utility:

a) Press and hold the front panel power button for four seconds to boot the appliance.

b) Press **F8** when prompted to open the Cisco IMC Configuration Utility.

When you access the Cisco IMC Configuration Utility for the first time, you are prompted to change the default password, which is *password*. The Strong Password feature is enabled.

The following are the requirements for a strong password:

- The password can have a minimum of 8 characters and a maximum of 14 characters.
- The password must not contain the user's name.
- The password must contain characters from three of the following categories:
  - English uppercase letters (A through Z)
  - English lowercase letters (a through z)
  - Base 10 digits (0 through 9)
  - Non-alphabetic characters !, @, #, $, %, ^, &, *, -, _, =, ‘

Step 4 Continue this procedure by following the instructions provided in Setting Up the System with the Cisco IMC Configuration Utility, on page 23.

Connecting to the Appliance Remotely for Setup

This procedure requires the following equipment:

- One RJ-45 Ethernet cable that is connected to your management LAN.

Before you begin

To configure the system remotely, you must have a DHCP server on the same network as the system. Your DHCP server must be preconfigured with the range of MAC addresses for this server node. The MAC address is printed on a label that is on the pull-out asset tag on the front panel. This server node has a range of six MAC addresses assigned to the Cisco IMC. The MAC address printed on the label is the beginning of the range of six contiguous MAC addresses.

Procedure

Step 1 Attach a power cord to each power supply in your appliance, and then attach each power cord to a grounded power outlet.

Wait for approximately two minutes for the appliance to boot to standby power during the initial setup. You can verify the system's power status by looking at the system Power Status LED on the front panel. The system is in standby power mode when the LED is amber.

Step 2 Plug your management Ethernet cable into the dedicated management port on the rear panel.

Step 3 Allow your preconfigured DHCP server to assign an IP address to the server node.

Step 4 Use the assigned IP address to access and log in to the Cisco IMC for the server node.

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

Step 5 On the **Cisco IMC Server Summary** window, click **Launch KVM Console**.
A KVM console window opens.

Step 6 On the **Cisco IMC Summary** window, click **Power Cycle Server**.
The system reboots.

Step 7 Open the KVM console window.

Note
The KVM console window must be an active window for the following keyboard actions to work.

Step 8 When prompted, press **F8** to enter the Cisco IMC Configuration Utility.

Note
When you open the Cisco IMC Configuration Utility for the first time, the Strong Password feature is enabled, and you are prompted to change the default password. The default password is *password*.

The following are the requirements for a strong password:

- The password can have a minimum of 8 characters and a maximum of 14 characters.
- The password must not contain the user's name.
- The password must contain characters from three of the following categories:
  - English uppercase letters (A through Z)
  - English lowercase letters (a through z)
  - Base 10 digits (0 through 9)
  - Nonalphabetic characters !, @, #, $, %, ^, &, *, -, _, =, ‘‘

Step 9 Continue this procedure by following the instructions provided in Setting Up the System with the Cisco IMC Configuration Utility, on page 23.

Setting Up the System with the Cisco IMC Configuration Utility

Before you begin

The following procedure can be performed after you connect to the system and open the Cisco IMC Configuration Utility.

Note You must use the versions of Cisco IMC firmware from the Cisco ISE download site, which are qualified versions for use with the SNS hardware appliances. Versions of Cisco IMC for UCS are not compatible. Newer versions of Cisco IMC are developed for SNS hardware appliances after they are developed for UCS.

Procedure

Step 1 Set the NIC mode to choose the ports that are to be used to access Cisco IMC for server management:

- Shared LOM EXT (default): This is the shared LOM extended mode, the factory default setting. With this mode, the Shared LOM and Cisco Card interfaces are both enabled. If you select this option, you must select the default **Active-Active** NIC redundancy setting in Step 2.
- Shared LOM: The 1-Gb or 10-Gb Ethernet ports are used to access Cisco IMC. If you select this option, you must select the **Active-Active** or **Active-standby** NIC redundancy setting in Step 2.
- Dedicated: The dedicated management port is used to access Cisco IMC. If you select this option, you must select the **None** NIC redundancy setting in Step 2.
- Cisco Card: The Virtual Interface Card (VIC) ports are used to access the Cisco IMC. If you select this option, you must select the **Active-Active** or **Active-standby** NIC redundancy setting in Step 2.
- VIC Slot: Only if you use the Cisco Card NIC mode, you must select this setting to match the location where your VIC is installed.

Step 2 Choose one of the following options for NIC redundancy:

- **None**: The Ethernet ports operate independently and do not fail over if there is a problem. This setting can be used only with the Dedicated NIC mode.
- **Active-standby**: If an active Ethernet port fails, traffic fails over to a standby port. Shared LOM and Cisco Card modes can use the **Active-standby** or **Active-active** settings.
- **Active-active** (default): All Ethernet ports are utilized simultaneously. You must use only this NIC redundancy setting if you have selected the Shared LOM EXT mode. Shared LOM and Cisco Card modes can use the **Active-standby** or **Active-active** settings.

Step 3 Choose whether to enable DHCP for dynamic network settings, or to enter static network settings.

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

The **Static IPv4 and IPv6 Settings** include the following:

- **Cisco IMC IP address**: For IPv6, valid values are 1 to 127.
- **Gateway**: For IPv6, if you do not know the gateway, you can set it as none by entering **::** (two colons).
- **Preferred DNS Server Address**: For IPv6, you can set this as none by entering **::** (two colons).

Step 4 (Optional) Configure VLAN settings.

Step 5 (Optional) Set a hostname for the server.

Step 6 (Optional) Enable dynamic DNS (DDNS) and set a DDNS domain.

Step 7 (Optional) If you check the **Factory Default** check box, the server reverts to the factory defaults.

Step 8 (Optional) Set a default user password.

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

Step 9 (Optional) Enable auto-negotiation of port settings, or set the port speed and duplex mode manually.

Note
Auto-negotiation is applicable only when you use the Dedicated NIC mode. Auto-negotiation sets the port speed and duplex mode automatically based on the switch port to which the server is connected. If you disable auto-negotiation, you must set the port speed and duplex mode manually.

Step 10 (Optional) Reset the port profiles and the port name.

Step 11 Press **F5** to refresh the settings. You might have to wait for about 45 seconds until the new settings appear along with the message "`Network settings configured`" is displayed before moving to the next step.

Step 12 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 when you boot the server.

Updating the BIOS and Cisco IMC Firmware



Caution When you upgrade the BIOS firmware, you must also upgrade the Cisco IMC firmware to the corresponding version. If you don't do this, the server will not boot.

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

The server uses the firmware obtained from and certified by Cisco. Cisco provides release notes with each firmware image.

You can upgrade the Cisco IMC and BIOS firmware by using the Cisco IMC GUI or CLI.

Accessing the System BIOS

Procedure

Step 1 Enter the BIOS Setup Utility by pressing the **F2** key when prompted during the initial setup.

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 the changes by pressing **Esc**.

Smart Access Serial

This server supports the Smart Access Serial feature. This feature allows you to switch between the host serial and the Cisco IMC CLI. This feature has the following requirements:

- A serial cable connection, which can use either the RJ-45 serial connector on the server rear panel, or a DB-9 connection when using the KVM cable on the front-panel KVM console connector.
- Console redirection must be enabled in the server BIOS.
- Terminal type must be set to VT100+ or VTUFT8.
- Serial-over-LAN (SOL) must be disabled.
- To switch from host serial to Cisco IMC CLI, press **Esc+9**.

  You must enter your Cisco IMC credentials to authenticate the connection.
- To switch from Cisco IMC CLI to host serial, press **Esc+8**.

Note You cannot switch to Cisco IMC CLI if the serial-over-LAN (SOL) feature is enabled.

- After a session is created, it is shown in the CLI or web GUI by the name `serial`.

Configure baud rate for communication with serial devices

If the Cisco SNS appliance needs to communicate with other serial devices using the standard baud rate of 9600 bps, you must manually configure the baud rate in both the BIOS and Serial over LAN (SOL) settings.

Procedure

Step 1 Log on to the Cisco Integrated Management Controller (CIMC) web user interface.

Step 2 Navigate to **Compute > Remote Management > Serial over LAN**.

Step 3 From the **Baud Rate** drop-down list, select **9600 bps** and click **Save**.

Step 4 Navigate to **Compute > BIOS > Configure BIOS > Server Management**.

Step 5 From the **Baud Rate** drop-down list, select **9.6k** and click **Save**.

Note The baud rate change in BIOS only takes effect after a system reboot.

Configuring RAID Controller During Initial Setup or After Replacing HDD or SSD

Perform the following procedure to configure the RAID controller cards after replacing the HDD or SSD.

Procedure

Step 1 Replace the existing HDD or SSD:

a) Log in to the Cisco SNS 3700 series appliance.
b) Click the Menu icon in the top-left corner.
c) Choose **Storage > Cisco RAID Controller > Controller Info**.
d) Click **Clear Boot Drive**.
e) Click **OK** to clear the boot drive.
f) Click **Virtual Drive Info**.
g) In the **Virtual Drives** window, select the virtual drive and click **Delete Virtual Drive**.
h) Click **Physical Drive Info**.
i) In the **Physical Drives** window, select the physical drives and click **Prepare for Removal**.

Note
Cisco ISE is uninstalled when you delete the drives. You have to re-install Cisco ISE after replacing the HDD or SSD.

Step 2 Configure RAID controller:

a) Log in to the Cisco SNS 3700 series appliance.
b) Click the Menu icon in the top-left corner.
c) Choose **Storage > Cisco RAID Controller > Controller Info**.
d) Click **Create Virtual Drive from Unused Physical Drives**.

Note
When the drives are inserted they might be shown as being configured in Just a Bunch Of Disks (JBOD) mode. You must unconfigure the drives before adding the drives to a virtual disk.

e) From the **RAID Level** drop-down list, select **RAID 10** for SNS 3755 and SNS 3795. Select **RAID 0** for SNS 3715.

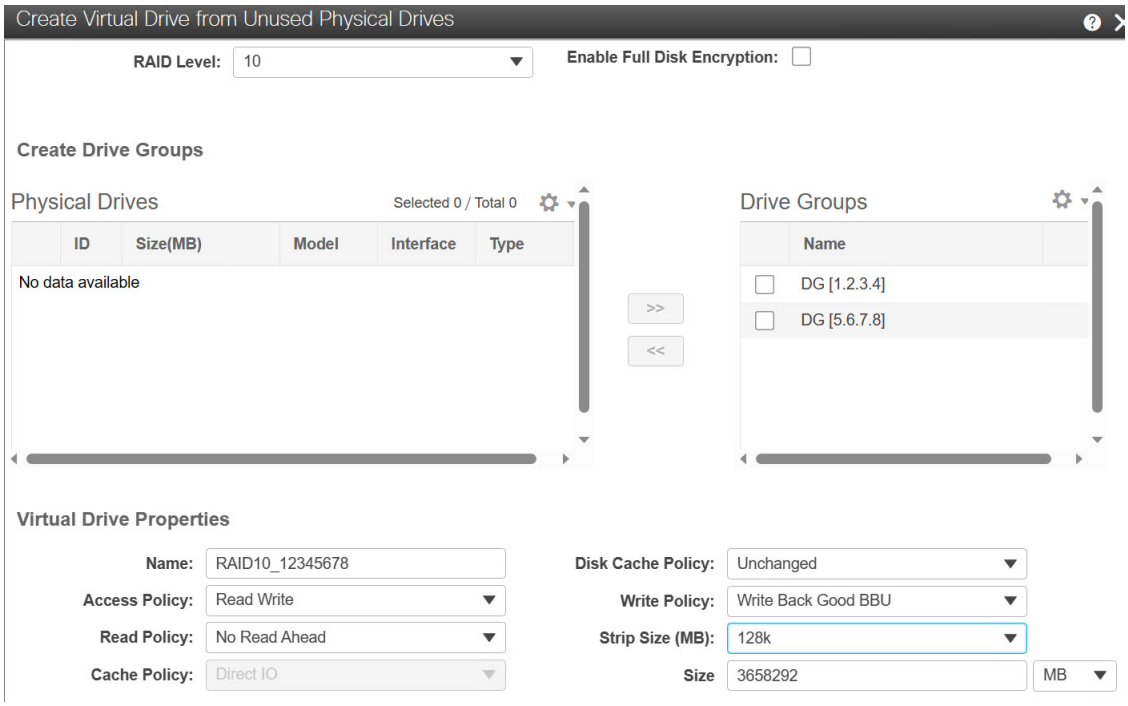
Note

Enable full disk encryption (FDE) if you plan to use the SED feature.

f) In the **Create Drive Groups** section, select the drives that are to be grouped together and move them to the **Drive Groups** pane. You can create different groups based on your requirements.

g) In the **Virtual Drive Properties** section, from the **Write Policy** drop-down list, select **Write Back Good BBU**.

Figure 11: Virtual Drive Properties



h) Click **OK**.

You can verify whether the RAID configuration is successful in the **Virtual Drive Info** tab.

i) Install Cisco ISE on the newly replaced HDD or SSD.

For more information, see the Chapter "Configuring RAID Levels" in the Cisco UCS Server Configuration Utility User Guide.

Enabling Drive Security for SED

You can enable Local Key Management or Remote Key Management for a SED.

Important Drive security can only be enabled on a virtual drive created from unused physical drives with full disk encryption (FDE) enabled. Drive security cannot be applied retroactively to existing virtual drives.

Local Key Management

To enable Local Key Management for a SED, perform the following steps:

Procedure

Step 1 Log in to the Cisco SNS 3700 series appliance.
Step 2 Click the Menu icon in the top-left corner.
Step 3 Choose **Storage > Cisco 12G SAS RAID Controller > Controller Info**.
Step 4 Click **Enable Drive Security**.
Step 5 Click the **Local Key Management** radio button.
Step 6 Enter the security key.
Step 7 Click **Save**.
Step 8 Click **Virtual Drive Info**.
Step 9 In the **Virtual Drives** window, select the virtual drive and click **Secure Virtual Drive**.

A lock icon appears in the **Virtual Drive Number** column for the drive for which drive security is enabled.

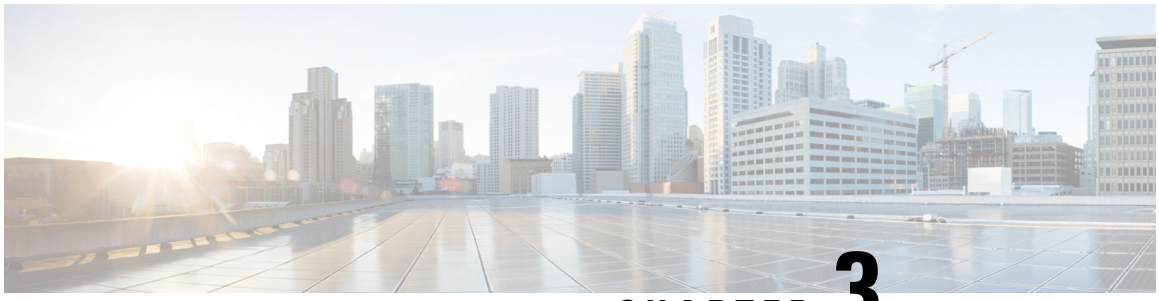
Remote Key Management

To enable Remote Key Management for a SED, perform the following steps:

Procedure

Step 1 Click the Menu icon in the top-left corner.
Step 2 Choose **Admin > Security Management > Secure Key Management**.
Step 3 Enter the Key Management Interoperability Protocol (KMIP) server details.
Step 4 Attach the root CA certificate, client certificate, and client private key certificate.
Step 5 Check the **Enable Secure Key Management** check box.
Step 6 Choose **Storage > Cisco 12G SAS RAID Controller > Controller Info**.
Step 7 Click **Enable Drive Security**.
Step 8 Click the **Remote Key Management** radio button.
Step 9 Click **Save**.
Step 10 Click **Virtual Drive Info**.
Step 11 In the **Virtual Drives** window, select the virtual drive and click **Secure Virtual Drive**.

A lock icon appears in the **Virtual Drive Number** column for the drive for which drive security is enabled.



CHAPTER 3

Server Specifications

- , on page 31
- Physical Specifications, on page 31
- Environmental Specifications, on page 31
- Power Specifications, on page 32
- Power Cord Specifications, on page 34

This chapter lists the physical, environmental, and power specifications for the server.

Physical Specifications

The following table lists the physical specifications for the server.

Table 3: Physical Specifications

Description	Specification
Height	1.7 in. (43.2 mm)
Width	16.9 in. (429.0 mm)
Depth (length)	Server only: 30 in. (762 mm) Server with slide rail: 31.5 in (800.1 mm)
Weight	• Maximum: 42.432 lb (19.25 kg) • Minimum: 22.32 lb (10.13 kg)

Environmental Specifications

The following table lists the environmental requirements and specifications for the server.

Table 4: Environmental Specifications

Description	Specification
Temperature, Operating	Dry bulb temperature of 10°C to 35°C (50°F to 95°F) Derate the maximum temperature by 1°C (33.8°F) every 305 meters of altitude above 900 m
Temperature, Extended Operating	5°C to 40°C (41°F to 104°F) with no direct sunlight Derate the maximum temperature by 1°C (33.8°F) every 305 meters of altitude above 900 m
Temperature, non-operating (when the server is stored or transported)	Dry bulb temperature of 40 °C to 65 °C (-40°F to 149 °F)
Humidity (RH), operating	10% to 90% and 28°C (82.4°F) maximum dew-point temperature, noncondensing environment Minimum to be higher (more moisture) of -12 ˚C (10.4 ˚F) dew point or 8% relative humidity Maximum to be 24 ˚C (75.2 ˚F) dew point or 90% relative humidity
Humidity (RH), non-operating	5% to 93% relative humidity, noncondensing, with a maximum wet bulb temperature of 28 °C across the 20 °C to 40 °C dry bulb range.
Altitude, operating	A maximum elevation of 3050 meters (10,006 feet)
Altitude, non-operating	An elevation of 0 to 12,000 meters (39,370 feet)
Maximum Operating Duration	Unlimited
Sound power level Measure A-weighted per ISO7779 LwAd (Bels) Operation at 73°F (23°C)	5.5
Sound pressure level Measure A-weighted per ISO7779 LpAm (dBA) Operation at 73°F (23°C)	40

Power Specifications



Note Do not mix power supply types or wattages in the server. Both power supplies must be identical.

The power specifications for the supported power supply options are listed in the following sections.

1050-W V2 DC Power Supply

This table lists the specifications for 1050-W V2 DC power supply.

Parameter	Specification
Input Connector	Molex 42820
Input Voltage Range (V rms)	-48
Maximum Allowable Input Voltage Range (V rms)	-40 to -72
Frequency Range (Hz)	NA
Maximum Allowable Frequency Range (Hz)	NA
Maximum Rated Output (W)	1050
Maximum Rated Standby Output (W)	36
Nominal Input Voltage (V rms)	-48
Nominal Input Current (A rms)	24
Maximum Input at Nominal Input Voltage (W)	1154
Maximum Input at Nominal Input Voltage (VA)	1154
Maximum Rated Efficiency (%) Minimum rating required to achieve 80PLUS platinum certification.	91
Maximum Rated Power Factor Minimum rating required to achieve 80PLUS platinum certification.	NA
Maximum Inrush Current (peak A)	15
Maximum Inrush Current (ms)	0.2
Maximum Ride-Through Time This is the duration for which output voltage remains within regulation limits at 100% load, during input voltage dropout.	5

1050-W AC Power Supply

This table lists the specifications for each 1050-W AC power supply.

Parameter	Specification
Input Connector	IEC320 C14

Parameter	Specification
Input Voltage Range (V rms)	100 to 240
Maximum Allowable Input Voltage Range (V rms)	90 to 264
Frequency Range (Hz)	50 to 60
Maximum Allowable Frequency Range (Hz)	47 to 63
Maximum Rated Output (W) Limited to 800 W when operating at low-line input voltage, 100-127 V	1050
Maximum Rated Standby Output (W)	36
Nominal Input Voltage (V rms)	230
Nominal Input Current (A rms)	5.2
Maximum Input at Nominal Input Voltage (W)	1154
Maximum Input at Nominal Input Voltage (VA)	1190
Maximum Rated Efficiency (%) Minimum rating required to achieve 80PLUS platinum certification.	90
Maximum Rated Power Factor Minimum rating required to achieve 80PLUS platinum certification.	0.97
Maximum Inrush Current (peak A)	15
Maximum Inrush Current (ms)	0.2
Maximum Ride-Through Time Time output voltage remains within regulation limits at 100% load, during input voltage dropout	12

Power Cord Specifications

Each power supply in the server has a power cord. Standard power cords or jumper power cords are available for connection to the appliance. The shorter jumper power cords that are used in racks are available as an optional alternative to the standard power cords.



Note Only the approved power cords or jumper power cords listed below are supported.

Table 5: Supported Power Cords

Description	Length (Feet)	Length (Meters)
CAB-48DC-40A-8AWG DC power cord, -48 VDC, 40 A, 8 AWG Three-socket mini-fit connector to three-wire	11.7	3.5
CAB-C13-C14-AC AC power cord, 10 A; C13 to C14, recessed receptacle	9.8	3.0
CAB-250V-10A-AR AC power cord, 250 V, 10 A Argentina	8.2	2.5
CAB-C13-C14-2M-JP AC Power Cord, C13 to C14 Japan PSE Mark	6.6	2.0
CAB-9K10A-EU AC Power Cord, 250 V, 10 A, CEE 7/7 Plug Europe	8.2	2.5
CAB-250V-10A-IS AC Power Cord, SFS, 250 V, 10 A Israel	8.2	2.5
CAB-250V-10A-CN AC power cord, 250 V, 10 A PR China	8.2	2.5
CAB-ACTW AC power cord, 250 V, 10 A, C13 EL302 Taiwan	7.5	2.3
CAB-C13-CBN AC cabinet jumper power cord, 250 V, 10 A, C13 to C14	2.2	0.68
CAB-C13-C14-2M AC cabinet jumper power cord, 250 V, 10 A, C13 to C14	6.6	2.0

CAB-9K10A-AU AC power cord, 250 V, 10 A, 3112 plug, Australia	8.2	2.5
CAB-N5K6A-NA AC power cord, 200/240 V, 6 A, North America	8.2	2.5
CAB-250V-10A-ID AC power Cord, 250 V, 10 A, India	8.2	2.5
CAB-9K10A-SW AC power cord, 250 V, 10 A, MP232 plug Switzerland	8.2	2.5
CAB-250V-10A-BR AC power Cord, 250 V, 10 A Brazil	8.2	2.5
CAB-9K10A-UK AC power cord, 250 V, 10 A (13 A fuse), BS1363 plug United Kingdom	8.2	2.5
CAB-9K12A-NA AC power cord, 125 V, 13 A, NEMA 5-15 plug North America	8.2	2.5
CAB-AC-L620-C13 AC power cord, NEMA L6-20 to C13 connectors	6.6	2.0
CAB-9K10A-IT AC power cord, 250 V, 10 A, CEI 23-16/VII plug Italy	8.2	2.5
CAB-C13-C14-3M-IN AC power cord jumper, C13 to C14 connector India	9.8	3.0
CAB-C13-C14-IN AC power cord jumper, C13 to C14 connector India	4.6	1.4

CAB-9K10A-KOR Power Cord, 125 V AC, 13 A, KSC8305 plug Korea	6	1.8
CAB-JPN-3PIN 90-125 V AC, 12 A, NEMA 5-15 plug Japan	—	2.4
R2XX-DMYMPWRCORD No power cord; PID option for ordering server with no power cord	NA	NA