Hardware Installation Guide for Cisco UCS E-Series Servers

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This document provides installation information for the Cisco UCS E-Series Servers (E-Series Servers). It includes the following sections:

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- Recommended Safety Practices for Installing Cisco UCS E-Series Servers, page 12
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New and Changed Information

Table 1 provides an overview of the significant changes that are introduced to this guide for the current release.

Table 1 New and Changed Information for Software Release 1.0(2)

Feature	Description	Changed in Software Release	Where Documented
New Platform Support	Support added to install the E-Series Server into the Cisco 4451-X Integrated Services Router (Cisco ISR 4451-X).	1.0(2)	• "Cisco UCS E-Series Servers Overview" section on page 2 • "Hardware Requirements" section on page 2
Verifying E-Series Server Installation	Command to verify that the router recognizes the E-Series Server.	1.0(2)	"Verifying E-Series Server Installation" section on page 24
Migrating the E-Series Server from an ISR G2 into a Cisco ISR 4451-X	Special instructions for migrating the E-Series Server from an ISR G2 into a Cisco ISR 4451-X.	1.0(2)	"Migrating the E-Series Server from an ISR G2 into a Cisco ISR 4451-X" section on page 25
New Online Insertion and Removal (OIR) command	New OIR command for E-Series Server installed in a Cisco ISR 4451-X.	1.0(2)	"Removing the E-Series Server from a Cisco ISR 4451-X" section on page 28

Cisco UCS E-Series Servers Overview

The Cisco UCS E-Series Servers (E-Series Servers) are the next generation of Cisco UCS Express servers. E-Series Servers are a family of size, weight, and power-efficient blade servers that are housed within the Generation 2 Cisco Integrated Services Routers (ISR G2) and the Cisco 4451-X Integrated Services Router (Cisco ISR 4451-X). These servers provide a general purpose compute platform for branch-office applications deployed either as bare-metal on operating systems, such as Microsoft Windows or Linux, or as virtual machines on hypervisors, such as VMware vSphere Hypervisor™, Microsoft Hyper-V, or Citrix XenServer.

Hardware Requirements

E-Series Servers reside in the Cisco 2900 series and 3900 series ISR G2, and the Cisco ISR 4451-X. The following E-Series Servers are supported:

- UCS-E140S—Single-wide E-Series Server
- UCS-E140D—Double-wide E-Series Server, 4 core CPU
- UCS-E160D—Double-wide E-Series Server, 6 core CPU
- UCS-E140DP—Double-wide E-Series Server, 4 core CPU, with PCIe
- UCS-E160DP—Double-wide E-Series Server, 6 core CPU, with PCIe

Table 2 provides hardware information for the E-Series Servers.

Table 2 E-Series Server Hardware at a Glance

Feature	UCS-E140S Single-Wide E-Series Server)	UCS-E140D and UCS-E160D Double-Wide E-Series Servers	UCS-E140DP and UCS-E160DP Double-Wide E-Series Servers with PCIe
Form Factor	Single-wide SM	Double-wide SM	Double-wide SM
CPU	Intel Xeon™ E3-1105C	Intel Xeon™ E5-2418L and E5-2428L	Intel Xeon™ E5-2418L and E5-2428L
CPU Cores	4 Core	4 Core and 6 Core	4 Core and 6 Core
Memory DIMM Slots	2 Slots	3 Slots	3 Slots
RAM	8 GB to 16 GB Supports DDR3 1333 MHz VLP UDIMM 1.5 V, 4 GB, and 8 GB	8 GB to 48 GB Supports DDR3 1333 MHz RDIMM 1.35 V, 4 GB, 8 GB, and 16 GB	8 GB to 48 GB Supports DDR3 1333 MHz RDIMM 1.35 V, 4 GB, 8 GB, and 16 GB
RAID	RAID 0 and RAID 1	RAID 0, RAID 1, and RAID 5	RAID 0 and RAID 1
Storage Type	SATA, SAS, SSD, and SED	SATA, SAS, SSD, and SED	SATA, SAS, SSD, and SED
HDD	SAS 10K RPM, SATA 7200 RPM, and SAS SSD Drives[1] Supports 2 Drives	SAS 10K RPM, SATA 7200 RPM, and SAS SSD Drives[1] Supports 3 Drives	SAS 10K RPM, SATA 7200 RPM, and SAS SSD Drives[1] Supports 2 Drives
Storage Capacity	200 GB to 2 TB	200 GB to 3 TB	200 GB to 2 TB
Internal Network Interface	2 Gigabit Ethernet Interfaces	2 Gigabit Ethernet Interfaces	2 Gigabit Ethernet Interfaces
External Interfaces	1 USB Connector 1 RJ-45 Gigabit Ethernet Connector 1 Management Port 1 KVM Port (Supports VGA, 1 USB, 1 Serial DB9)	2 USB Connectors 2 RJ-45 Gigabit Ethernet Connectors 1 Management Port 1 VGA Port 1 Serial DB9	2 USB Connectors 2 RJ-45 Gigabit Ethernet Connectors 1 Management Port 1 VGA Port 1 Serial DB9

Table 2 E-Series Server Hardware at a Glance (continued)

Feature	UCS-E140S Single-Wide E-Series Server)	UCS-E140D and UCS-E160D Double-Wide E-Series Servers	UCS-E140DP and UCS-E160DP Double-Wide E-Series Servers with PCIe
Router Platforms	2911, 2921, 2951, 3925, 3925e, 3945, 3945e, 4451-X	2921, 2951, 3925, 3925e, 3945, 3945e, 4451-X	2921, 2951, 3925, 3925e, 3945, 3945e, 4451-X
Maximum Number of E-Series Servers per Router	2911 ISR G2—1 E-Series Server 2921 ISR G2—1 E-Series Server 2951 ISR G2—2 E-Series Servers 3925 ISR G2—2 E-Series Servers 3925e ISR G2—2 E-Series Servers 3945 ISR G2—4 E-Series Servers 3945e ISR G2—4 E-Series Servers ISR 4451-X—2 E-Series Servers	2911 ISR G2—None 2921 ISR G2—1 E-Series Server 2951 ISR G2—1 E-Series Server 3925 ISR G2—1 E-Series Server 3925e ISR G2—1 E-Series Server 3945 ISR G2—1 E-Series Server 3945e ISR G2—1 E-Series Server ISR 4451-X—1 E-Series Server **Note** The Cisco 2921 and 2951 ISR G2 support 4-core only.	2911 ISR G2—None 2921 ISR G2—1 E-Series Server 2951 ISR G2—1 E-Series Server 3925 ISR G2—1 E-Series Servers 3925e ISR G2—1 E-Series Server 3945 ISR G2—1 E-Series Server 3945e ISR G2—1 E-Series Server ISR 4451-X—1 E-Series Server **Note** The Cisco 2921 and 2951 ISR G2 support 4-core only.

1. All hardware drives within the E-Series Server must be installed with the same type of storage device; either all SAS drives or all SATA drives.

Table 3 shows the Cisco EtherSwitch Enhanced High-Speed WAN Interface Cards (EHWICs) and Cisco EtherSwitch Service Modules that are supported on the E-Series Server.

Table 3 Supported Cisco EtherSwitch EHWIC and Cisco EtherSwitch Service Modules

Cisco EtherSwitch EHWIC	Cisco EtherSwitch Service Module
• EHWIC-D-8ESG-P= • EHWIC-D-8ESG-P • EHWIC-D-8ESG= • EHWIC-D-8ESG • EHWIC-4ESG-P= • EHWIC-4ESG-P • EHWIC-4ESG= • EHWIC-4ESG	• SM-D-ES3G-48-P • SM-D-ES3-48-P • SM-D-ES2-48 • SM-ES3G-24-P • SM-ES3-24-P • SM-ES2-24-P • SM-ES2-24 • SM-ES3G-16-P

Table 4 lists the SFP transceivers that are supported on the E100-PCIE10GEFCOE.

Table 4 SFP Transceivers Supported on the E100-PCIE10GEFCOE

SFP	Description
SFP-H10GB-CU1M	SFP+ 10GBASE-CU 1-meter cable, passive
SFP-H10GB-CU3M	SFP+ 10GBASE-CU 3-meter cable, passive
SFP-H10GB-CU5M	SFP+ 10GBASE-CU 5-meter cable, passive
SFP-H10GB-ACU7M	SFP+ 10GBASE-CU 7-meter cable, active
SFP-H10GB-ACU10M	SFP+ 10GBASE-CU 10-meter cable, active
JDSU (PLRXPL-SC-S43-22-N) SFP+	SFP+ (Optical)
SFP-10G-SR	SFP+ 10GBase-SR (Optical)

E-Series Servers

E-Series Servers are available in the following two form factors:

- Single-Wide E-Series Server, page 5
- Double-Wide E-Series Server, page 8

Single-Wide E-Series Server

Figure 1 shows the front panel of the single-wide E-Series Server.

Figure 1 Front Panel of the Single-Wide E-Series Server

1	Gigabit Ethernet port	**2**	Management port
3	Power switch	**4**	LEDs for HDD1
5	Keyboard, Video, Mouse (KVM) port **Note** Use the KVM connector that is shipped with the E-Series Server. See Figure 2.	**6**	Hard disk drive 1
7	LEDs for HDD0	**8**	USB
9	Hard disk drive 2	**10**	Reset switch

Figure 2 shows the KVM connector that is shipped with the single-wide E-Series Server.

Figure 2 KVM Connector

1	USB connector	**2**	DB15 connector—video port
3	DB9 connector—serial port		

Figure 3 shows the internal components of the single-wide E-Series Server.

Figure 3 Single-Wide E-Series Server

1	Memory DIMM slots	**2**	HDD
3	SD0 **Note** The SD card in the SD0 card slot contains the Cisco Integrated Management Controller (CIMC) software and must always be present.	**4**	SD1

Double-Wide E-Series Server

Figure 4 shows the front panel of the double-wide E-Series Server.

Figure 4 Front Panel of the Double-Wide E-Series Server

1	Power switch	**2**	Reset switch **Note** This resets all CMOS settings.
3	LEDs	**4**	VGA port
5	Serial port	**6**	Dual SD Card slots and cover **Note** Do not remove the SD card from the SD0 card slot when the system is in operation. The SD card in the SD0 card slot contains the CIMC software and should always be present.
7	Gigabit Ethernet ports (GE2 and GE3)	**8**	Management port
9	USB ports Each port provides up to 500 mA of current. Devices that require higher power, such as CD/DVD ROM, need their own external power.	**10**	(Optional) HDD2, PCIe assembly or blank slot
11	Hard disk drives (HDD0 and HDD1)	**12**	(Optional) Alternate PCIe assembly with FCoE port **Note** Use with PCIe assembly modules only.
13	(Optional) Alternate PCIe assembly with 4-Gigabit Ethernet ports **Note** Use with PCIe assembly modules only.		

Figure 5 shows the internal components of the double-wide E-Series Server.

Figure 5 Double-Wide E-Series Server

1	Memory DIMM slots	**2**	(Optional) PCIe assembly Available for HDD2, FCoE port, or 4-Gigabit Ethernet ports.
3	Hard disk drives (HDD0 and HDD1)		

Understanding the E-Series Server LED State

Table 5 lists the single-wide E-Series Server LEDs and describes the LED colors and state.

Table 5 Single-Wide E-Series Server LEDs

LED	Color	Indicates
HDD 0 ACT	Green	Status of the hard drive activity. Can be one of the following: • Steady—Hard drive is present. • Blinking—Active. • Off—Inactive or there is no power supplied to the CPU.
HDD0 FLT	Amber	The CPU is in use. Fault is detected on the hard drive. **Note** The SYS LED displays solid green.
HDD1 ACT	Green	Status of the hard drive activity. Can be one of the following: • Steady—Hard drive is present. • Blinking—Active. • Off—Inactive or there is no power supplied to the CPU.
HDD1 FLT	Amber	The CPU is in use. Fault is detected on the hard drive. **Note** The SYS LED displays solid green.
SYS	Green	Status can be one of the following: • Solid—Operation is normal. **Note** If DRAM is not detected, the SYS LED still displays solid green. • Blinking—System is booting before entering EFI shell.
	Amber	Fault is detected on the processor.
Power LED	Green	Status can be one of the following: • Steady—CIMC and CPU are both operating normally. • Blinking—CPU is operating normally, and CIMC is booting up.
	Amber	Status can be one of the following: • Steady—CIMC is operating normally, and the CPU is powered down. • Blinking —CIMC is in the process of booting up, and the CPU is powered down.

Table 6 lists the double-wide E-Series Server LEDs and describes the LED colors and state.

Table 6 Double-Wide E-Series Server LEDs

LED	Color	Indicates
M0[1]	Off	No memory is installed in this socket.
	Green	Memory M0 is installed.
	Amber	Memory M0 is installed, but fault is detected.
M1[2]	Off	No memory installed in this socket.
	Green	Memory M1 is installed.
	Amber	Memory M1 is installed, but fault is detected.
M2[3]	Off	No memory is installed in this socket.
	Green	Memory M2 is installed.
	Amber	Memory M2 is installed, but fault is detected.
HOT	Green	Temperature is in range.
	Amber	High temperature is detected on the CPU, power supply, or other internal sensors.
D0A	Green	Status of the hard drive activity. Can be one of the following: • Steady—Hard drive is present. • Blinking—Activity. • Off—Inactive or there is no power supplied to the CPU.
D0F	Amber	Fault is detected on the hard drive.
D1A	Green	Status of the hard drive activity. Can be one of the following: • Steady—Hard drive is present. • Blinking—Active. • Off—Inactive or there is no power supplied to the CPU.
D1F	Amber	Fault is detected on the hard drive.
D2A	Green	If an optional hard drive is present, the status of the hard drive activity can be one of the following: • Steady—Hard drive is present. • Blinking—Active. • Off—Inactive or there is no power supplied to the CPU. If there is a PCIe card installed, the LED is steady green.
D2F	Amber	Fault is detected on the hard drive.
ACT	Green	Blinks when the processor is active.
STS	Green	Operation is normal.
	Amber	Fault is detected on the processor.
IMC	Green	Blinks when the CIMC is operating normally.

Table 6 Double-Wide E-Series Server LEDs (continued)

LED	Color	Indicates
Power LED	Green	Status can be one of the following: • Steady—CIMC and CPU are both operating normally. • Blinking—CPU is operating normally, and CIMC is booting up.
	Amber	Status can be one of the following: • Steady—CIMC is operating normally, and the CPU is powered down. • Blinking —CIMC is in the process of booting up, and the CPU is powered down.

1. This is memory installed on the DIMM 0 slot.
2. This is the DIMM 1 slot.
3. This is the DIMM 2 slot.

Recommended Safety Practices for Installing Cisco UCS E-Series Servers

This section describes recommended practices for safe and effective installation of the hardware, and includes the following topics:

- Safety Recommendations, page 12
- Preventing Electrostatic Discharge Damage, page 13
- General Guidelines for Installing the E-Series Servers on a Rack, page 13
- Maintenance Guidelines for E-Series Servers, page 14
- Safety Warnings for E-Series Servers, page 14

Safety Recommendations

To prevent hazardous conditions, follow these safety recommendations while working with this equipment:

- Keep tools away from walk areas where you or others could fall over them.
- Do not wear loose clothing around the router. Fasten your tie or scarf and roll up your sleeves to prevent clothing from being caught in the chassis.
- Wear safety glasses when working under any conditions that might be hazardous to your eyes.
- Locate the emergency power-off switch in the room before you start working. If an electrical accident occurs, shut the power off.
- Before working on the router, turn off the power and unplug the power cord.

- Disconnect all power sources before doing the following:
  - Installing or removing a router chassis
  - Working near power supplies
- Do not work alone if potentially hazardous conditions exist.
- Always check that power is disconnected from a circuit.
- Remove possible hazards from your work area, such as damp floors, ungrounded power extension cables, or missing safety grounds.
- If an electrical accident occurs, proceed as follows:
  - Use caution; do not become a victim yourself.
  - Turn off power to the room using the emergency power-off switch.
  - If possible, send another person to get medical aid. Otherwise, determine the condition of the victim and then call for help.
  - Determine if the person needs rescue breathing or external cardiac compressions; then take appropriate action.

Preventing Electrostatic Discharge Damage

Electrostatic discharge can damage equipment and impair electrical circuitry. Electrostatic discharge occurs when electronic printed circuit cards, such as those used in Cisco service modules and network modules, are improperly handled and can result in complete or intermittent equipment failure. Always observe the following electrostatic discharge damage (ESD) prevention procedures when installing, removing, and replacing the E-Series Servers:

- Make sure that the router chassis is electrically connected to earth ground.
- Wear an ESD-preventive wrist strap, and make sure that it makes good contact with your skin.
- Connect the wrist strap clip to an unpainted portion of the chassis frame to channel unwanted ESD voltages to ground.
- If no wrist strap is available, ground yourself by touching the metal part of the router chassis.

Caution The wrist strap and clip must be used correctly to ensure proper ESD protection. Periodically confirm that the resistance value of the ESD-preventive wrist strap is between 1 and 10 megohms (Mohm).

General Guidelines for Installing the E-Series Servers on a Rack

Excessive vibration can result in the loss of data and disk drive failure. The E-Series Server with hard disk drives should not be installed in a rack cabinet where it might be exposed to excessive high vibration. Before you install the router and E-Series Server in the rack cabinet, review the following recommendations:

Note The E-Series Server with solid state drives can withstand higher vibration levels.

- Install the server away from heating, ventilation, and air-conditioning (HVAC) system, and other large building air movers.
- Install the rack away from areas that might be affected by external vibrations, such as a garage that might have moving vehicles, or a factory with heavy machinary.
- Do not install the server in a rack that will be placed in a moving vehicle.

Maintenance Guidelines for E-Series Servers

The following maintenance guidelines apply to E-Series Servers:

- Keep the router chassis area clear and dust-free during and after installation.
- If you remove the chassis cover for any reason, store it in a safe place.
- Do not perform any action that creates a hazard to people or makes equipment unsafe.
- Keep walk areas clear to prevent falls or damage to equipment.
- Follow installation and maintenance procedures as documented by Cisco Systems, Inc.

Safety Warnings for E-Series Servers

The following safety warning statements apply to all hardware procedures involving E-Series Servers for the Cisco ISR G2 and Cisco ISR 4451-X. Translations of these warnings are available in the *Cisco Network Modules and Interface Cards Regulatory Compliance and Safety Information* document at:

http://www.cisco.com/en/US/docs/routers/access/interfaces/rcsi/IOHrcsi.html

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

Warning **Only trained and qualified personnel should be allowed to install or replace this equipment.** Statement 1030

Warning **No user-serviceable parts inside. Do not open.** Statement 1073

Warning **Ultimate disposal of this product should be handled according to all national laws and regulations.** Statement 1040

Warning **Read the installation instructions before connecting the system to the power source.** Statement 1004

Warning **Installation of the equipment must comply with local and national electrical codes.** Statement 1074

Warning **This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.** Statement 1028

Warning **This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.** Statement 1024

Warning **When installing or replacing the unit, the ground connection must always be made first and disconnected last.** Statement 1046

Warning **Do not use this product near water; for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool.** Statement 1035

Warning **Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.** Statement 1036

Warning **Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.** Statement 1037

Warning **Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.** Statement 1038

Warning **To report a gas leak, do not use a telephone in the vicinity of the leak.** Statement 1039

Warning **Class 1 laser product.** Statement 1008

Warning **Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not view directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard.** Statement 1056

The following warnings apply in Australia:

Warning **Do not touch the power supply when the power cord is connected. For systems with a power switch, line voltages are present within the power supply even when the power switch is OFF and the power cord is connected. For systems without a power switch, line voltages are present within the power supply when the power cord is connected.** Statement 4

Warning **This equipment will be inoperable when mains power fails.** Statement 198

Warning **To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Both LAN and WAN ports may use RJ-45 connectors. Use caution when connecting cables.** Statement 1021

Warning **Hazardous network voltages are present in WAN ports regardless of whether power to the router is OFF or ON. To avoid electric shock, use caution when working near WAN ports. When detaching cables, detach the end away from the router first.** Statement 1026

Warning **Before opening the chassis, disconnect the telephone-network cables to avoid contact with telephone-network voltages.** Statement 1041

Warning **This equipment must be installed and maintained by service personnel as defined by AS/NZS 3260. Incorrectly connecting this equipment to a general-purpose outlet could be hazardous. The telecommunications lines must be disconnected 1) before unplugging the main power connector or 2) while the housing is open, or both.** Statement 1043

Installing the E-Series Servers

Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.** Statement 1030

Warning **To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.** Statement 1021

Warning **Hazardous network voltages are present in WAN ports regardless of whether power to the unit is OFF or ON. To avoid electric shock, use caution when working near WAN ports. When detaching cables, detach the end away from the unit first.** Statement 1026

Caution To prevent damage to the E-Series Servers, handle the server by the chassis or frame.

This section includes the following topics:

- Basic Workflow for Installing the E-Series Server, page 17
- Tools and Equipment Required for E-Series Server Installation, page 18
- Removing and Installing Blank Faceplates, page 18
- Preparing the Router Slot for E-Series Server Installation, page 19
- Installing the E-Series Server into the Router, page 22
- Verifying E-Series Server Installation, page 24

Basic Workflow for Installing the E-Series Server

1. Gather the required tools and equipment. See the "Tools and Equipment Required for E-Series Server Installation" section on page 18.
2. Connect the wrist-strap clip to an unpainted portion of the chassis frame to channel unwanted ESD voltages to ground.
3. Remove blank faceplates from the slots that you want to use. See the "Removing the Blank Faceplates" section on page 18.
4. Prepare the router slot for E-Series Server installation. See the "Preparing the Router Slot for E-Series Server Installation" section on page 19.
5. Install the E-Series Server into the router. See the "Installing the E-Series Server into the Router" section on page 22.
6. Verify the E-Series Server installation. See the "Verifying E-Series Server Installation" section on page 24.

Tools and Equipment Required for E-Series Server Installation

You will need the following tools and equipment while working with the E-Series Server:

- Number 1 Phillips screwdriver or a small flat-blade screwdriver
- ESD-preventive wrist strap
- For routers using DC power—Tape to secure DC circuit breaker handle

Removing and Installing Blank Faceplates

Warning **Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.** Statement 1029

This section includes the following topics:

- Removing the Blank Faceplates, page 18
- Installing the Blank Faceplates, page 19

Removing the Blank Faceplates

Use this procedure to remove the blank faceplate from the router's SM slot.

Procedure

Step 1 Using either a number 1 Phillips screwdriver or a small flat-blade screwdriver, unscrew the captive screws and remove the blank faceplate from the chassis slot. See Figure 6.

Figure 6 Blank Faceplate

Step 2 Save the blank faceplates for future use.

What to Do Next

Prepare the router slot for E-Series Server installation. See the "Preparing the Router Slot for E-Series Server Installation" section on page 19.

Installing the Blank Faceplates

All empty chassis slots on the router must be covered with blank faceplates to ensure proper cooling and airflow and to prevent electromagnetic interference.

Use this procedure to install a blank faceplate on a router's service module (SM) slot.

Procedure

Step 1 For a single-wide E-Series Server—Install a slot divider in the SM slot. See the "Installing Slot Dividers" section on page 20.

Step 2 Install the blank faceplate. See Figure 7.

- For blank faceplates with mounting screws—Align the captive screws with the screw holes on the chassis. Using either a number 1 Phillips screwdriver or a small flat-blade screwdriver, tighten the captive screws until the blank faceplate is flush with the chassis.
- For blank faceplates with tabs—Align the blank faceplate tabs with the slots on the chassis. Press the blank faceplate against the chassis until the tabs pop into place. The blank faceplate must be flush with the chassis when installed.

Figure 7 Blank Faceplate

Preparing the Router Slot for E-Series Server Installation

Several Cisco routers have flexible SM slots to support various Cisco service modules and server modules. Before installing a module, prepare the slot for the module's particular form factor.

Slot dividers are used to customize SM slots for the different form factors, such as the single-wide E-Series Server. Slot dividers are used on the following routers:

- Cisco 2911, 2921, and 2951 series ISR G2
- Cisco 3900 series ISR G2

Figure 8 shows a slot driver without retention screw.

Figure 8 Slot Divider for SM Slots

See the following topics for more information:

- Installing Slot Dividers, page 20
- Removing Slot Dividers, page 22

Installing Slot Dividers

Use this procedure to install a slot divider in a single-wide E-Series Server.

Note Slot dividers are used only in single-wide E-Series Servers. For double-wide E-Series Servers, you must remove the slot divider. See "Removing Slot Dividers" section on page 22.

Procedure

Step 1 Remove any installed modules, blank faceplates, and slot adapters from the router slot that you want to use.

Step 2 Insert the top rails of the slot divider between the two guide rails in the top of the module slot as shown in Figure 9.

Figure 9 Inserting a Slot Divider into a Service Module Slot (with Retention Screw)

Step 3 Push the slot divider in until it is fully seated. Slot dividers have a long retention screw that slides into the divider. See Figure 9.

Step 4 Tighten the retention screw on the front of the slot divider with a number 1 Phillips screw driver so that the front surface of the slot divider is flush with the router panel. See Figure 10.

Figure 10 Tightening the Slot Divider in a Service Module Slot

What to Do Next

Install the E-Series Server into the router. See the "Installing the E-Series Server into the Router" section on page 22.

Removing Slot Dividers

To install double-wide E-Series Server in router slots, you must remove the slot dividers. Use this procedure to remove the slot dividers from the module slot.

Procedure

Step 1 Remove any installed service modules, blank faceplates, and slot adapters from the router slot that you plan to use.

Step 2 Loosen the retention screw on the front of the slot divider.

Step 3 Pull the slot divider straight out of the module slot.

What to Do Next

Install the E-Series Server into the router. See the "Installing the E-Series Server into the Router" section on page 22.

Installing the E-Series Server into the Router

Before You Begin

Verify that you have done the following:

1. Removed the blank faceplates installed over the slot that you intend to use. See the "Removing and Installing Blank Faceplates" section on page 18.
2. Saved the blank faceplates for future use.
3. Prepared the slot for the module form factor that you are installing. See the "Preparing the Router Slot for E-Series Server Installation" section on page 19.

Note For the Cisco 3900 ISR G2—If you are using PoE, and you want to install one double-wide E-Series Server and any number of server modules in a Cisco 3900 ISR G2, you must use a second AC and PoE supply to support this configuration.

For example, if you have a Cisco 3900 ISR G2 that has a PoE-capable switch providing power to phones, and you want to install a double-wide E-Series Server in one slot and one or two single-wide servers in the other slots, then you must use a second AC and PoE supply to support this configuration.

E-Series Servers can be installed either before or after mounting the router, whichever is more convenient. Use this procedure to install an E-Series Server into a router.

Procedure

Step 1 Turn off the electrical power to the router. Leave the power cable plugged in to the channel ESD voltages to ground.

Note Alternatively, the Cisco 3900 ISR G2 and the Cisco ISR 4451-X support OIR. See the "Online Insertion and Removal" section on page 26.

Step 2 Align the module with the guides in the chassis walls or slot divider and slide it gently into the slot. See Figure 11 and Figure 12.

Figure 11 Installing a Single-Wide E-Series Server in a Cisco ISR G2

1	Single-wide E-Series Server	**2**	Slot divider
3	Router chassis		

Figure 12 Installing a Double-Wide E-Series Server in a Cisco ISR G2

1	Double-wide E-Series Server	**2**	Router chassis

Step 3 Push the module into place until you feel the edge connector seat securely into the connector on the router backplane. The module faceplate should contact the chassis rear panel.

Tip When installing the E-Series Server into a Cisco ISR 4451-X, if the module does not completely slide into the router, push the module slightly upwards, and then inward to complete the insertion.

Step 4 Using a number 1 Phillips or flat-blade screwdriver, tighten the captive mounting screws on the module faceplate.

Step 5 If you are installing a single-wide E-Series Server, install a blank faceplate on the other side of the slot. See the "Installing the Blank Faceplates" section on page 19.

Step 6 Connect the E-Series Server to the network and power up the router and E-Series Server.

What to Do Next

1. Load a compatible Cisco IOS image.
2. Power on the server.
3. Verify that the router recognizes the E-Series Server. See the "Verifying E-Series Server Installation" section on page 24.

Verifying E-Series Server Installation

Before You Begin

- Install the E-Series Server into the router.
- Load a compatible Cisco IOS image.
- Power on the server.

To verify the E-Series Server installation, use one of the following commands:

- To display a high-level overview of the entire physical system, use the **show platform** command:

```
Router# show platform
Chassis type: ISR4451/K9
Slot Type State Insert time (ago)
--------- ------------------- ---------------------
0 ISR4451/K9 ok 1d01h
0/0 ISR4400-4X1GE ok 1d01h
1 ISR4451/K9 ok 1d01h
1/0 UCS-E160DP-M1/K9 ok 1d01h
2 ISR4451/K9 ok 1d01h
R0 ISR4451/K9 ok, active 1d01h
F0 ISR4451/K9 ok, active 1d01h
P0 XXX-XXXX-XX ok 1d01h
P1 Unknown ps, 1d01h
P2 ACS-4450-FANASSY ok 1d01h
Slot CPLD Version Firmware Version
--------- ------------------- ---------------------
```

```
0 12090323 12.2(20120829:165313)
1 12090323 12.2(20120829:165313)
2 12090323 12.2(20120829:165313)
R0 12090323 12.2(20120829:165313)
F0 12090323 12.2(20120829:165313)
```

- To verify that the router recognizes the E-Series Server, use the **show hw-module subslot all oir** command:

```
Router# show hw-module subslot all oir
Module Model Operational Status
------------- -------------------- ------------------------
subslot 0/0 ISR4451-X-4X1GE ok
subslot 1/0 UCS-E140S-M1/K9 ok
subslot 2/0 UCS-E140S-M1/K9 ok
```

Migrating the E-Series Server from an ISR G2 into a Cisco ISR 4451-X

If you are migrating the E-Series Server from an ISR G2 into a Cisco ISR 4451-X, you must first update the CIMC firmware image to release 2.0(1.20130626092411) or the latest version and the BIOS firmware image to release 1.5.0.2 or the latest version—while the E-Series Server is still installed in the ISR G2—and then migrate it into the Cisco ISR 4451-X.

We strongly recommend that you upgrade both the CIMC and the BIOS firmware images.

For CIMC firmware installation instructions, see the "CIMC Firmware Management" chapter in the *GUI Configuration Guide for Cisco UCS E-Series Server Modules Integrated Management Controller* on Cisco.com.

If you migrate the E-Series Server into the Cisco ISR 4451-X without first updating the CIMC firmware, the E-Series Server will continuously reset. To stop the reset and install the firmware, see the "Stopping the E-Series Server from Resetting and Updating the CIMC Firmware" section on page 26.

Stopping the E-Series Server from Resetting and Updating the CIMC Firmware

If you migrate the E-Series Server into the Cisco ISR 4451-X without first updating the CIMC firmware, the E-Series Server will continuously reset. Use this procedure to stop the reset and install the firmware.

Note Some of the steps in this procedure are performed from the router, and other steps are performed from the E-Series Server.

DETAILED STEPS

	Command or Action	Purpose
Step 1	Router# **hw-module subslot** *slot/subslot* **maintenance enable**	Disables error recovery, which stops the E-Series Server from being reset. **Note** Enter the commands in Step 1 and Step 2 from the router.
Step 2	Router# **hw-module subslot** *slot/subslot* **session imc**	Starts a CIMC session.
Step 3	Server# **scope cimc**	From the CIMC CLI, enters the CIMC command mode. **Note** Enter the commands in Step 3 through Step 8 from the E-Series Server.
Step 4	Server/cimc# **scope firmware**	Enters the CIMC firmware command mode.
Step 5	Server/cimc/firmware# **update** *tftp-ip-address path-and-filename*	Starts the CIMC firmware update. The server will obtain the update firmware at the specified path and file-name from the TFTP server at the specified IP address.
Step 6	Server/cimc/firmware# **show [detail]**	Displays the available firmware and status.
Step 7	Server/cimc/firmware# **activate [1 | 2]**	Activates the selected image. If no image number is specified, the server activates the currently inactive image.
Step 8	Click **Ctrl a Ctrl q**.	Exits the CIMC session.
Step 9	Router# **hw-module subslot** *slot/subslot* **maintenance disable**	Enables error recovery. **Note** Enter the commands in Step 9 and Step 10 from the router.
Step 10	Router# **hw-module subslot** *slot/subslot* **reload**	Reloads the E-Series Server. **Note** This reload power-cycles the E-Series Server.

Online Insertion and Removal

Online insertion and removal (OIR) provides uninterrupted network operation, maintains routing information, and ensures session preservation on the Cisco 3900 series ISR G2 and Cisco ISR 4451-X. You can use online insertion and removal to install or replace hardware without affecting system operations.

Note The Cisco 2900 series ISR G2 does not support OIR of the E-Series Servers.

To avoid damaging the router, turn off the electrical power on the router and disconnect network cables before inserting or removing the E-Series Server from the Cisco 2900 ISR G2.

The OIR commands for the Cisco 3900 series ISR G2 and Cisco ISR 4451-X are different. See the following topics for more information:

- Removing the E-Series Server from a Cisco 3900 Series ISR G2, page 27
- Removing the E-Series Server from a Cisco ISR 4451-X, page 28

Removing the E-Series Server from a Cisco 3900 Series ISR G2

This section includes the following topics:

- Shutting Down the E-Series Server Installed in a Cisco 3900 Series ISR G2, page 27
- Restarting the E-Series Server Installed in a Cisco 3900 Series ISR G2, page 28
- Inserting the E-Series Server in a Cisco 3900 Series ISR G2, page 28

Shutting Down the E-Series Server Installed in a Cisco 3900 Series ISR G2

SUMMARY STEPS

1. **enable**
2. **ucse** *slot* **shutdown**
3. **hw-module sm** *slot* **oir-stop**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	**ucse** *slot* **shutdown** **Example:** `Router# ucse 4 shutdown`	Shuts down the E-Series Server gracefully. **Note** Before proceeding with the next command, verify that the E-Series Server has shut down. When the E-Series Server shuts down, the power LED turns orange. You can also use CIMC to verify if the E-Series Server has powered down.

	Command or Action	Purpose

Step 3	**hw-module sm** *slot* **oir-stop**
	
	Example:
	`Router# hw-module sm 4 oir-stop`
	`SM Hardware slot 4 can be removed`
		Shuts down power to the specified E-Series Server to prepare it for removal.
		
		When it is safe to remove the E-Series Server, a message is displayed as shown in the example.
		
		Note Before removing the E-Series Server, verify that power to the slot is shut down. The power LED should be off.

Restarting the E-Series Server Installed in a Cisco 3900 Series ISR G2

If the **oir-stop** command was issued and the E-Series Server was not physically removed from the slot, you can restart the E-Series Server with the **oir-start** command. From a console terminal, issue the **hw-module sm** *slot* **oir-start** command. The console displays the module's changing state.

Example:

```
Router# hw-module sm 2 oir-start
Router#
*Mar  8 05:40:19.195: %LINK-3-UPDOWN: Interface ucse2/0, changed state to up
*Mar  8 05:40:20.195: %LINEPROTO-5-UPDOWN: Line protocol on Interface ucse2/0, changed
state to up
```

Inserting the E-Series Server in a Cisco 3900 Series ISR G2

The Cisco 3900 ISR G2 that is up and running can detect when an E-Series Server is inserted in the SM slot and will automatically provide power to the server.

Removing the E-Series Server from a Cisco ISR 4451-X

This section includes the following topics:

- Shutting Down the E-Series Server Installed in a Cisco ISR 4451-X, page 29
- Restarting the E-Series Server Installed in a Cisco ISR 4451-X, page 29
- Inserting the E-Series Server in a Cisco ISR 4451-X, page 29

Shutting Down the E-Series Server Installed in a Cisco ISR 4451-X

SUMMARY STEPS

1. **enable**
2. **ucse subslot** *slot*/**0 shutdown**
3. **hw-module subslot** *slot*/**0 oir-stop**

DETAILED STEPS

	Command or Action	Purpose

Step 1	`enable`
	
	Example:
	`Router> enable`
		Enables privileged EXEC mode.
		Enter your password if prompted.

Step 2	`ucse subslot slot/0 shutdown`
	
	Example:
	`Router# ucse subslot 1/0 shutdown`
		Shuts down the E-Series Server gracefully.
		Note Before proceeding with the next command, verify that the E-Series Server has shut down. When the E-Series Server shuts down, the power LED turns orange. You can also use CIMC to verify if the E-Series Server has powered down.

Step 3	`hw-module subslot slot/0 oir-stop`
	
	Example:
	`Router# hw-module subslot 1/0 oir-stop`
	`SM Hardware slot 0 can be removed`
		Shuts down power to the specified E-Series Server to prepare it for removal.
		When it is safe to remove the E-Series Server, a message is displayed as shown in the example.
		Note Before removing the E-Series Server, verify that power to the slot is shut down. The power LED should be off.

Restarting the E-Series Server Installed in a Cisco ISR 4451-X

If the **oir-stop** command was issued and the E-Series Server was not physically removed from the slot, you can restart the E-Series Server with the **oir-start** command. From a console terminal, issue the **hw-module subslot** *slot*/**0 oir-start** command. The console displays the module's changing state.

Example:
```
Router# hw-module subslot 1/0 oir-start
```

Inserting the E-Series Server in a Cisco ISR 4451-X

A Cisco ISR 4451-X that is up and running can detect when an E-Series Server is inserted in the SM slot. After the router detects the E-Series Server, the router software enables power to the server.

Installing or Replacing Hard Disk Drives on the E-Series Servers

The double-wide E-Series Servers can be ordered with two or three hard disk drives (HDD) or solid-state drives (SSD) preinstalled. The double-wide E-Series Servers support the following Redundant Array of Independent Disks (RAID) configuration:

- RAID 0 (data striping)—Data is stored evenly in stripe blocks across all disks in the array, providing fast throughput. There is no data redundancy, and all data is lost if any disk fails.
- RAID 1 (disk mirroring)—Data is written to two disks, where the data in both disk drives is identical. This provides complete data redundancy if one disk fails.
- RAID 5 (disk striping with distributed parity)—Data and parity information is striped and distributed across all disks in the array with distributed parity information. RAID 5 requires three hard disks and provides limited fault tolerance.

The double-wide E-Series Servers support adding a hot spare drive under RAID 1. If one of the disk drives under RAID 1 fails and there is a hot spare drive installed, the system automatically rebuilds the disk image onto the hot spare drive. The hot spare drive replaces the failed drive as the mirrored drive under RAID 1. To maintain fault tolerance, you must install another hard disk drive.

The single-wide E-Series Servers come with two HDDs or SSDs preinstalled. The single-wide E-Series Servers support RAID 0 and RAID 1.

Warning **Only trained and qualified personnel should be allowed to install or replace this equipment.** Statement 1030

Warning **Ultimate disposal of this product should be handled according to all national laws and regulations.** Statement 1040

Warning **No user-serviceable parts inside. Do not open.** Statement 1073

Warning **This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.** Statement 1028

Warning **Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.** Statement 1029

Note The hard disk drives must be installed in the following order:

1. HDD0
2. HDD1
3. HDD2

Procedure

Use this procedure to install or replace a hard disk drive on the E-Series Servers.

Step 1 Connect the wrist strap clip to an unpainted portion of the chassis frame to channel unwanted ESD voltages to ground.

Step 2 Turn off power to the router.

Note Alternatively, the Cisco 3900 ISR G2 and the Cisco ISR 4451-X support OIR. See the "Online Insertion and Removal" section on page 26.

Step 3 Using either a number 1 Phillips screwdriver or a small flat-blade screwdriver, unscrew the captive screws on the faceplate and remove the cover faceplate. See Figure 13 and Figure 14.

Figure 13 Replacing a Hard Disk Drive on the Single-Wide E-Series Server

1	Captive screws	**2**	Hard disk drive assembly

Figure 14 Replacing a Hard Disk Drive on the Double-Wide E-Series Server

1	Hard disk drive	**2**	Hard disk drive assembly
3	Cover faceplate	**4**	Captive screws on hard disk drive assembly

Step 4 (Optional) If the slot is empty, use the screwdriver to loosen the screws on the bracket, and then remove the bracket (see Figure 15). Go to Step 7.

Figure 15 Empty HDD2 Slot

1	Bracket	**2**	Captive screws on hard disk drive assembly

Step 5 (Optional) If there is a hard disk drive, use the screwdriver to loosen the captive screws on the hard disk drive assembly.

Step 6 (Optional) To remove the faulty hard disk, pull the handle of the hard disk drive assembly and slide out the hard disk drive.

Step 7 Slide the new hard disk drive into the E-Series Server until it clicks into place.

Step 8 Tighten the captive screws on the new hard disk drive assembly. Make sure that the HDDs are firmly secure to the carrier to avoid rattling during operation.

Step 9 Replace the faceplate.

Step 10 Restart the E-Series Server.

Step 11 Configure the new HDD as the new hotspare disk drive. For the configuration procedure, see the *GUI Configuration Guide for UCS E-Series Servers Integrated Management Controller.*

Replacing the PCIe Assembly in a Double-Wide E-Series Server

To replace the PCIe assembly, you must first remove the old assembly and then install the new one. See the following topics for more information:

- PCIe Assembly, page 34
- Removing the PCIe Assembly, page 35
- Installing the PCIe Assembly, page 36

PCIe Assembly

Figure 16 shows the PCIe Assembly, which consists of a PCIe card; a flex assembly, which connects the PCIe slot to the motherboard; and a plastic bracket, which slides over the end of the PCIe card.

Figure 16 PCIe Assembly

1	Plastic bracket	**2**	Flex assembly
3	PCIe card		

Removing the PCIe Assembly

Procedure

Step 1 Connect the wrist strap clip to an unpainted portion of the chassis frame to channel unwanted ESD voltages to ground.

Step 2 Turn off power to the router.

Note Alternatively, the Cisco 3900 ISR G2 and the Cisco ISR 4451-X support OIR. See the "Online Insertion and Removal" section on page 26.

Step 3 Using either a number 1 Phillips screwdriver or a small flat-blade screwdriver, unscrew the captive screws on the faceplate. Loosen the cover faceplate and remove it (see Figure 17). Save the screws.

Figure 17 Removing the PCIe Assembly

1	Captive screws on the face plate	**2**	Flex assembly screw
3	Plastic bracket screw	**4**	PCIe assembly

Step 4 Remove the M3 screw holding the flex assembly in place and save the screw for later use.

Step 5 Remove the flex assembly and set it aside.

Step 6 Remove the screws holding the faceplate to the PCIe card.

Step 7 Slide the PCIe card assembly out through the opening of the faceplate carrier.

Installing the PCIe Assembly

Procedure

Step 1 Connect the wrist strap clip to an unpainted portion of the chassis frame to channel unwanted ESD voltages to ground.

Step 2 Turn off power to the router.

Note Alternatively, the Cisco 3900 ISR G2 and the Cisco ISR 4451-X support OIR. See the "Online Insertion and Removal" section on page 26.

Step 3 Connect the PCIe connector on the flex assembly to the PCIe card. See Figure 16.

Step 4 Slide the plastic PCIe support over the end of the PCIe card.

Step 5 Reconnect the PCIe flex assembly to the motherboard. Be careful that you do not stress any connector contacts.

Step 6 Reinstall the M3 screw securing the PCIe assembly.

Step 7 Install the screws to secure the plastic PCIe card support.

Step 8 Tighten the PCIe card faceplate screws.

Step 9 Secure the PCIe card to the faceplate carrier using the faceplate captive fasteners.

Installing and Replacing the Memory DIMMS

Caution Always wear an ESD-preventive wrist strap and ensure that it makes good contact with your skin when you remove or install DIMMs. Connect the equipment end of the wrist strap to the metal part of the chassis.

Caution Handle the DIMMs by the edges only. DIMMs are ESD-sensitive components and can be damaged by mishandling.

Warning **Only trained and qualified personnel should be allowed to install or replace this equipment.** Statement 1030

Warning **Ultimate disposal of this product should be handled according to all national laws and regulations.** Statement 1040

Warning **No user-serviceable parts inside. Do not open.** Statement 1073

Warning **This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.** Statement 1028

Warning **Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.** Statement 1029

This section includes the following topics:

- Memory DIMM Location, page 37
- Removing the Memory DIMM, page 38
- Installing the Memory DIMM, page 39

Memory DIMM Location

Figure 18 shows the location of the memory DIMMs in a single-wide E-Series Server.

Note The single-wide E-Series Servers support up to 16 GB of DDR3 memory DIMMs.

Figure 18 Memory DIMM Location in a Single-Wide E-Series Server

Figure 19 shows the location of the memory DIMMs in a double-wide E-Series Server.

Note The double-wide E-Series Servers support up to 48 GB of DDR3 memory DIMMs.

Figure 19 Memory DIMM Location in a Double-Wide E-Series Server

Removing the Memory DIMM

Procedure

Step 1 Connect your wrist-strap clip to an unpainted portion of the chassis frame to channel unwanted ESD voltages to ground.

Step 2 Turn off power to the router.

Note Alternatively, the Cisco 3900 ISR G2 and the Cisco ISR 4451-X support OIR. See the "Online Insertion and Removal" section on page 26.

Step 3 Locate the DIMM on the E-Series Server. See the "Memory DIMM Location" section on page 37.

Step 4 Pull the latches away from the DIMM at both ends to lift the DIMM slightly.

Caution Take care not to dislodge the battery that is adjacent to the DIMM connectors.

Step 5 Pull the DIMM out of the socket as shown in Figure 20.

Figure 20 Removing the Memory DIMM

Step 6 Place the DIMM in an antistatic bag to protect it from ESD damage.

Installing the Memory DIMM

For information about the memory on the router, see the appropriate router documentation. For information about the memory on the E-Series Server, see the requirements of the installed operating system.

Note The single-wide E-Series Servers support up to 16 GB of DDR3 memory DIMMs.

The double-wide E-Series Servers support up to 48 GB of DDR3 memory DIMMs.

Performance degradation can occur if you use the following memory configuration:

- Mix DIMM sizes and densities within a channel.
- Partially populate a channel.
- Unevenly populate the DIMMs between CPUs.

Note DIMMs must be installed in the following order in the double-wide E-Series Servers:

1. DIMM 1 (center DIMM)
2. DIMM 2 (closest to the CPU)
3. DIMM 0 (outboard DIMM)

Note DIMMs must be installed in the following order in the single-wide E-Series Servers:

1. DIMM 0 (closest to the CPU)
2. DIMM 1 (outboard DIMM)

Procedure

Step 1 Connect the wrist strap clip to an unpainted portion of the chassis frame to channel unwanted ESD voltages to ground.

Step 2 Turn off power to the router.

Note Alternatively, the Cisco 3900 ISR G2 and the Cisco ISR 4451-X support OIR. See the "Online Insertion and Removal" section on page 26.

Step 3 Locate the DIMM connector. See the "Memory DIMM Location" section on page 37.

Note The DIMM connectors on the double-wide E-Series Servers are positioned at an angle; therefore, make sure that you insert the DIMM at approximately the same angle.

Step 4 Make sure that both latches on the DIMM connector are in the open position.

Step 5 Orient the DIMM so that the polarization notch on the DIMM lines up with the notch on the connector. See Figure 21.

Figure 21 Polarization Notch on the DIMM

1	Polarization notch		

Step 6 Insert the DIMM into the connector.

Step 7 Carefully and firmly press the DIMM into the connector until the latches close onto the DIMM. Make sure that both latches snap to the closed position against the DIMM. See Figure 22.

Figure 22 Installing a Memory DIMM

Step 8 Replace the E-Series Server.

Removing the COA

In the event that you need to return the E-Series Server, make sure that you retain the original Certificate of Authenticity (COA) label. The COA is the label from Microsoft with the code that enables their windows software. After you return the server, Cisco Systems cannot retrieve the COA label from the returned server.

The COA label is attached to the inside half of a plastic pull out label tray. To remove the COA label, cut away the half of the label that contains the COA label and save it. Return the unit with the other half of the label tray, which contains the units CLEI code, serial number, and other important unit labels, to Cisco Systems or your licensed reseller.

Figure 23 shows the location of the COA label.

Figure 23 COA Label Location

1	Plastic pull label tray		

Note The COA label from Microsoft is single layer and not foldable.

Cisco Integrated Management Controller

Cisco Integrated Management Controller (CIMC) is a separate management module built into the motherboard. CIMC is the management service for the E-Series Servers. You can use a web-based GUI or SSH-based CLI to access, configure, administer, and monitor the server. For more information on CIMC, see the *GUI Configuration Guide for Cisco UCS E-Series Server Integrated Management Controller.*

Related Documentation

For more information about Cisco UCS E-Series Servers, see the following related documentation:

- For links to the following Cisco UCS E-Series Servers documents, see the *Documentation Guide for Cisco UCS E-Series Servers*:
  - *Release Notes for Cisco UCS E-Series Servers*
  - *Getting Started Guide for Cisco UCS E-Series Servers*
  - *Hardware Installation Guide for Cisco UCS E-Series Servers (this document)*
  - *Cisco Network Modules, Server Modules, and Interface Cards Regulatory Compliance and Safety Information*
  - *GUI Configuration Guide for Cisco UCS E-Series Servers Integrated Management Controller*
  - *CLI Configuration Guide for Cisco UCS E-Series Servers Integrated Management Controller*
  - *CIMC XML API Programmer's Guide for Cisco UCS E-Series Servers*
  - *Troubleshooting Guide for Cisco UCS E-Series Servers*
  - *Open Source Used in Cisco UCS E-Series Servers*
- For more information about installing and connecting the Cisco 2900 series and Cisco 3900 ISRs, see the *Cisco 3900 Series and Cisco 2900 Series Hardware Installation Guide*.
- For more information about installing and connecting the Cisco ISR 4451-X, see the *Hardware Installation Guide for Cisco 4451-X Integrated Services Router*.
- For regulatory compliance and safety information, see the *Cisco Network Modules and Interface Cards Regulatory Compliance and Safety Information* document.

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