



Cisco UCS E-Series Servers Overview

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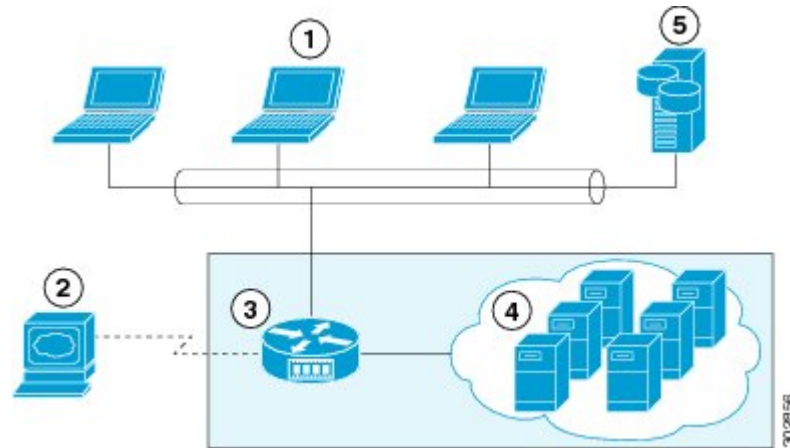
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Cisco UCS E-Series Servers Overview

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). 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.

The following figure shows an example of an E-Series Server Hypervisor deployment.

Figure 1: Example of an E-Series Server Hypervisor Deployment



1	Client Devices	4	Virtual Machines Hosted on the E-Series Server (applicable only if Hypervisor is running on the E-Series Server)
2	E-Series Server Management Console	5	Enterprise Storage Device
3	Cisco ISR G2 Router with E-Series Server running a Hypervisor or Bare-Metal Operating System		

E-Series Servers reside in the Cisco 2900 series or 3900 series ISR G2. 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

Server Hardware

The following table provides hardware information about the E-Series Servers.

Table 1: 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™ E5-2428L and E5-2418L	Intel Xeon™ E5-2428L and E5-2418L
CPU Cores	4 Core	4 Core and 6 Core	4 Core and 6 Core
DIMM Slots	2 Slots	3 Slots	3 Slots
RAM	8 GB - 16 GB Supports DDR3 1333MHz VLP UDIMM 1.5 V, 4 GB, and 8 GB	8 GB - 48 GB Supports DDR3 1333 MHz RDIMM 1.35 V, 4 GB, 8 GB and 16 GB	8 GB - 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 - 2 TB	200 GB - 3 TB	200 GB - 2 TB
Internal Network Interfaces	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
Router Platforms	2911, 2921, 2951, 3925, 3925e, 3945, 3945e	2921, 2951 ² , 3925, 3925e, 3945, 3945e	2921, 2951 ² , 3925, 3925e, 3945, 3945e

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
Maximum Number of E-Series Servers Per ISR G2	2900 ISR G2—1 E-Series Server 2951 ISR G2—2 E-Series Servers 3925 ISR G2—2 E-Series Servers 3945 ISR G2—4 E-Series Servers	2900 ISR G2—1 E-Series Server 3900 ISR G2—1 E-Series Server	2900 ISR G2—1 E-Series Server 3900 ISR G2—1 E-Series Server

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.

² 2921 and 2951 support 4-core only.

Supported Cisco EtherSwitch EHWIC and Cisco EtherSwitch Service Modules

The following table shows the Cisco EtherSwitch Enhanced High-Speed WAN Interface Cards (EHWICs) and Cisco EtherSwitch service modules that are supported on the Cisco ISR G2.

Table 2: 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=, and 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, and SM-ES3G-16-P

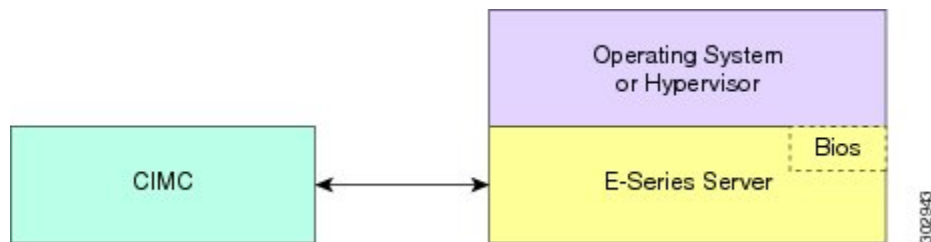
Server Software

E-Series Servers require three major software systems:

- CIMC Firmware
- BIOS Firmware
- Operating System or Hypervisor

The following figure shows how the software interacts with the E-Series Server.

Figure 2: Server Software



CIMC Firmware

Cisco Integrated Management Controller (CIMC) is a separate management module built into the motherboard. A dedicated ARM-based processor, separate from the main server CPU, runs the CIMC firmware. The system ships with a running version of the CIMC firmware. You can update the CIMC firmware, but no initial installation is needed.

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.

BIOS Firmware

BIOS initializes the hardware in the system, discovers bootable devices, and boots them in the provided sequence. It boots the operating system and configures the hardware for the operating system to use. BIOS manageability features allow you to interact with the hardware and use it. In addition, BIOS provides options to configure the system, manage firmware, and create BIOS error reports.

The system ships with a running version of the BIOS firmware. You can update the BIOS firmware, but no initial installation is needed.

Operating System or Hypervisor

The main server CPU runs on an operating system, such as Microsoft Windows or Linux; or on a Hypervisor. You can purchase an E-Series Server with pre-installed Microsoft Windows Server or VMware vSphere Hypervisor™, or you can install your own platform.

The following platforms have been tested on the E-Series Servers:

- Microsoft Windows:
 - Windows Server 2008 R2 Standard 64-bit
 - Windows Server 2008 R2 Enterprise 64-bit
- Linux:
 - Red Hat Enterprise Linux 6.2
 - SUSE Linux Enterprise 11, service pack 2
 - Oracle Enterprise Linux 6.0, update 2
- Hypervisor:

- VMware vSphere Hypervisor™ 5.0, update 1
- Hyper-V (Windows 2008 R2)
- Citrix XenServer 6.0

Managing E-Series Servers

The following table lists the management interfaces used by the E-Series Server.

Table 3: E-Series Server Management Interfaces

Management Interface	Description
Cisco IOS CLI	Configures the host router and the E-Series Server.
CIMC GUI	Web-based GUI used to access, configure, administer, and monitor the E-Series Server.
CIMC CLI	SSH-based CLI used to access, configure, administer, and monitor the E-Series Server.
SNMP	Allows you to view server configuration and status, and send fault and alert information through Simple Network Management Protocol (SNMP) traps.

E-Series Server Options

E-Series Servers are available in the following options:

- Option 1—E-Series Server without preinstalled operating system or hypervisor
- Option 2—E-Series Server with preinstalled Microsoft Windows Server

At the time of purchase, you can choose the appropriate RAID option that you want enabled on the E-Series Server.



Note If you purchase this option, the Microsoft Windows Server license is preactivated.

- Option 3—E-Series Server with preinstalled VMware vSphere Hypervisor™

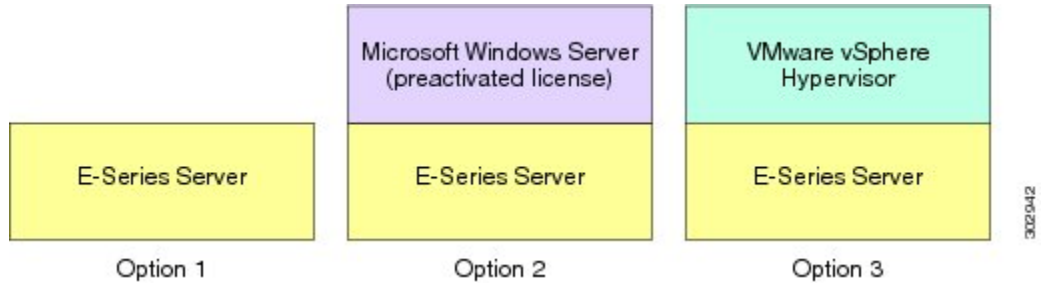
At the time of purchase, you can choose the appropriate RAID option that you want enabled on the E-Series Server.



Note The default username for the preinstalled VMware vSphere Hypervisor™ is **root**, which cannot be changed and the default password is **password**. After you login, we recommend that you change the password.

The following figure shows the E-Series Server options.

Figure 3: E-Series Server Options

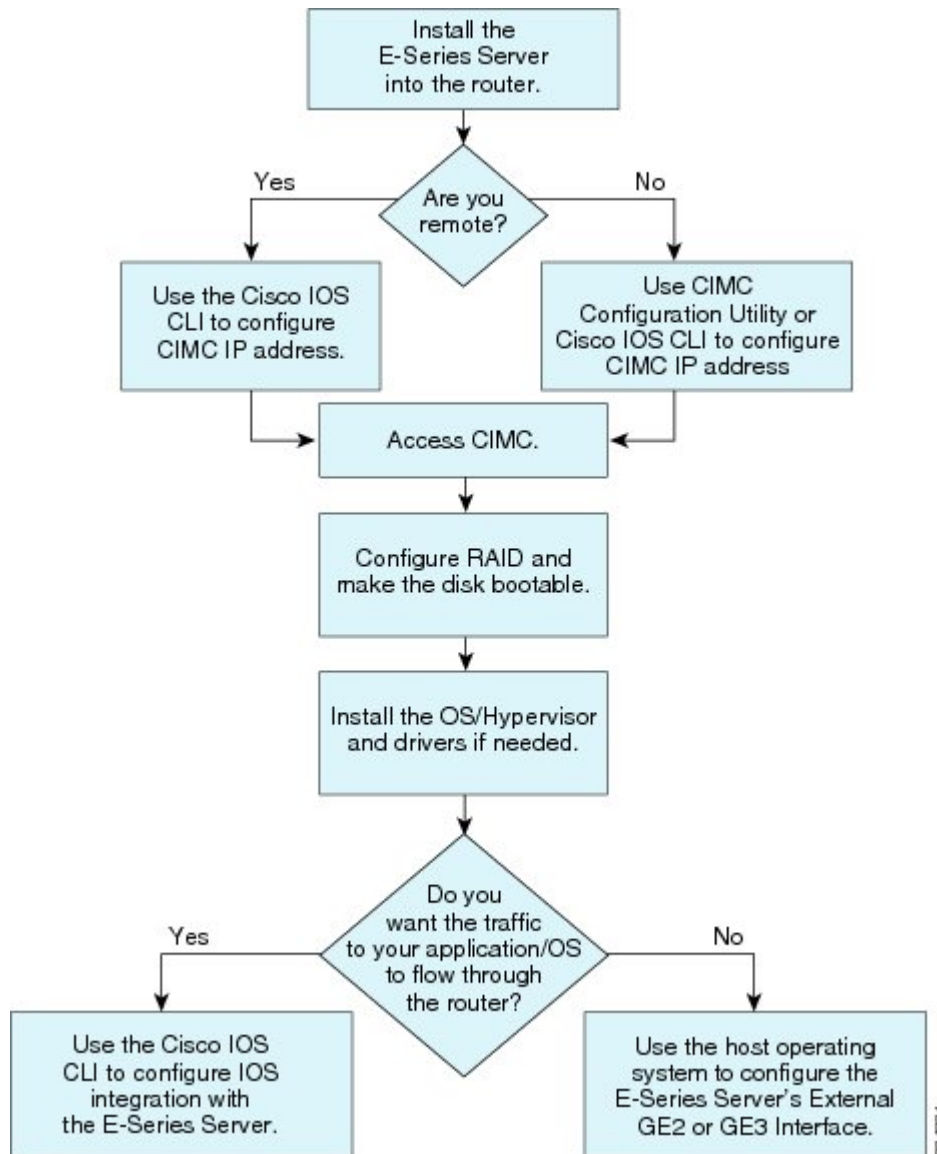


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Basic Workflow for Option 1—E-Series Server without Preinstalled Operating System or Hypervisor

The following figure shows the basic workflow for Option 1—E-Series Server without preinstalled operating system or hypervisor.

Figure 4: Basic Workflow—Option 1



The following procedure provides the references for the tasks that you must perform when you purchase Option 1—hardware only (E-Series Server without preinstalled operating system or hypervisor).

Procedure

	Command or Action	Purpose
Step 1	Install the E-Series Server into the router.	See Installing the E-Series Server into the Router .
Step 2	Configure CIMC IP address for CIMC access.	See Configuring CIMC Access .
Step 3	Access CIMC.	See Accessing CIMC .
Step 4	Configure RAID and make the disk drive bootable.	See Managing RAID .
Step 5	Install the operating system and if needed, install the drivers.	See Installing the Operating System .
Step 6	Configure an internal connection between the router and the E-Series Server.	Depending on whether you want the traffic to flow through the router or not, do one of the following: <ul style="list-style-type: none"> • If you <i>do not want</i> the traffic to your application or operating system to flow through the router, use the server's host operating system to configure the E-Series Server's external GE2 or GE3 interface. • If you <i>want</i> the traffic to your application or operating system to flow through the router, use the Cisco IOS CLI to configure an internal connection between the router and the E-Series Server. See Configuring Connection Between the Router and the E-Series Server.

Basic Workflow for Option 2—E-Series Server with Preinstalled Microsoft Windows Server

The following procedure provides the references for the tasks that you must perform when you purchase Option 2—E-Series Server with preinstalled Microsoft Windows Server.

Procedure

	Command or Action	Purpose
Step 1	Install the E-Series Server into the router.	See Installing the E-Series Server into the Router .
Step 2	Configure CIMC IP address for CIMC access.	See Configuring CIMC Access .

	Command or Action	Purpose
Step 3	Configure an internal connection between the router and the E-Series Server.	Depending on whether you want the traffic to flow through the router or not, do one of the following: <ul style="list-style-type: none"> • If you <i>do not want</i> the traffic to your application or operating system to flow through the router, use the server's host operating system to configure the E-Series Server's external GE2 or GE3 interface. • If you <i>want</i> the traffic to your application or operating system to flow through the router, use the Cisco IOS CLI to configure an internal connection between the router and the E-Series Server. See Configuring Connection Between the Router and the E-Series Server.
Step 4	Access CIMC, and then access the Microsoft Windows Server from CIMC .	See Accessing CIMC .

Basic Workflow for Option 3—E-Series Server with Preinstalled VMware vSphere Hypervisor

The following procedure provides the references for the tasks that you must perform when you purchase Option 3—E-Series Server with preinstalled VMware vSphere Hypervisor™.

Procedure

	Command or Action	Purpose
Step 1	Install the E-Series Server into the router.	See Installing the E-Series Server into the Router .
Step 2	Configure CIMC IP address for CIMC access.	See Configuring CIMC Access .
Step 3	Configure an internal connection between the router and the E-Series Server.	Depending on whether you want the traffic to flow through the router or not, do one of the following: <ul style="list-style-type: none"> • If you <i>do not want</i> the traffic to your application or operating system to flow through the router, use the server's host operating system to configure the E-Series Server's external GE2 or GE3 interface. • If you <i>want</i> the traffic to your application or operating system to flow through the router, use the Cisco IOS CLI to configure an internal connection between the router and the E-Series Server. See Configuring

	Command or Action	Purpose
		Connection Between the Router and the E-Series Server.
Step 4	Access CIMC, and then access the VMware vSphere Hypervisor™ from CIMC.	See Accessing CIMC.

Common Terms Used in this Guide

The following table provides the common terms used in this guide.

Table 4: Common Terms

Terms	Description
CIMC	Cisco Integrated Management Controller. CIMC is the management service for the E-Series Server. CIMC runs within the server. You can use CIMC to access, configure, administer, and monitor the server.
CLI	Command Line Interface.
IMC	Integrated Management Controller. IMC is used in the Cisco IOS commands to configure CIMC.
BMC	Board Management Controller.
LOM	LAN on Motherboard. Shared LOM interfaces are used to configure CIMC access.
RAID	Redundant Array of Inexpensive Disks. RAID is used to store E-Series Server data files.

