Cisco UCS E-Series Servers

Cisco Unified Computing System

Q. What is common between Cisco UCS® E-Series Servers and Cisco UCS B-Series Blade Servers or C-Series Rack Servers?

A. Cisco UCS E-Series Servers and Cisco UCS C-Series Rack Servers provide the same command-line interface (CLI) and GUI for hardware management. They share the same syntax, functions, and design for both interfaces, and they also now share the same baseboard management controller (BMC), the Cisco Integrated Management Controller (IMC), to manage a single server. In this way, the Cisco UCS E-Series differs from the previous-generation Cisco UCS Express implementation of Cisco IMC Express, which used an embedded controller located on the Cisco Integrated Services Routers Generation 2 (ISR G2) motherboard to manage multiple Cisco Services-Ready Engine (SRE) Modules in a single router chassis.

Q. What are the differences between Cisco UCS E-Series Servers and the Cisco UCS B-Series and C-Series Servers?

A. Cisco UCS E-Series Servers are designed to host essential infrastructure services and business-critical applications in a lean branch office using a size-, weight-, and power-optimized form factor. Such branch offices typically require only a few physical servers with modest hardware resources. Therefore, Cisco UCS E-Series Servers do not include features such as Cisco® Unified Fabric, Cisco Extended Memory Technology, Cisco VN-Link, and other hardware and large deployment management features that are relevant to data centers and not necessary for most lean branch-office environments. Additionally, Cisco E-Series Servers are housed within the Cisco ISR G2.

Q. Is the Cisco UCS E-Series integrated into Cisco UCS Manager?

A. Although the Cisco UCS E-Series management interface is similar to that for Cisco UCS C-Series standalone management, it uses the same Cisco UCS C-Series IMC, and will be immediately familiar to anyone who uses the Cisco UCS C-Series management tools. Cisco UCS E-Series management is not integrated into Cisco UCS Manager today because of the differences in features and deployment scenarios for the Cisco UCS B-Series, C-Series, and E-Series product lines. Integration into Cisco UCS Manager would imply integration into the Cisco Unified Computing System™ (Cisco UCS) fabric interconnects, which are unlikely to be deployed in branch offices.

Cisco UCS E-Series Blade Servers

Q. What are the differences between the previous-generation Cisco SRE and Cisco UCS-E Series blades?

A. The new Cisco UCS E-Series Servers provide a significant upgrade in processing power, maximum memory capacity, and maximum hard drive capacity. In addition, the double-wide blade can host PCI Express (PCIe) cards to add network interfaces.

Q. What is the memory configuration for the Cisco UCS E140S Software single-wide blade server and the Cisco UCS E140D and E160D Software double-wide blade servers?

A. The Cisco UCS E140S ships with 8 GB of memory standard and can be upgraded to 16 GB of memory. The Cisco E-Series E140D and E160D both also ship with 8 GB of memory standard and can be upgraded to 48 GB of memory.

Q. Can I upgrade the memory and hard drives myself?

A. Yes.

Q. Can I add a PCIe card myself?

A. No. PCIe is available as a factory integrated option only.

Q. What is the maximum power consumption by single-wide and double-wide blades in Cisco ISR G2 slots?

A. The power consumption on the units are as follows:

- Cisco UCS E140S: 65 watts (W)
- Cisco UCS E140D or 140DP: 140W
- Cisco UCS E160D or 160DP: 160W

Q. What is the number of single-wide and double-wide servers supported on Cisco 2900 and 3900 Series ISRs?

A. See Table 1.

Table 1: Single-Wide and Double-Wide Servers Supported on Cisco 2900 and 3900 Series

ROUTER	SLOTS	SINGLE-WIDE ONLY	DOUBLE-WIDE ONLY	SINGLE-WIDE AND DOUBLE - WIDE	CORE SERVERS
Cisco 2911	1	1	0	1 single-wide	Only 4-core servers
Cisco 2921	1	1	1	1 single-wide or 1 double-wide	Only 4-core servers
Cisco 2951	2	2	1	2 single-wide or 1 double-wide	Only 4-core servers
Cisco 3925	2	2	1	1 single-wide and 1 double-wide	4 or 6 cores
Cisco 3925E	2	2	1	1 single-wide and 1 double-wide	4 or 6 cores
Cisco 3945	4	4	1	2 single-wide and 1 double-wide	4 or 6 cores
Cisco 3945E	4	4	1	2 single-wide and 1 double-wide or 4 single-wide	4 or 6 cores
Cisco 4451	2	2	1	2 single-wide and 1 double-wide or 4 single-wide	4 of 6 cores

Q. What PCIe cards are supported?

A. Two 2 PCIe cards are supported in the Cisco UCS E-Series double-wide servers: a 4-port 1 Gigabit Ethernet PCIe card and a 1-port Enhanced Small Form-Factor Pluggable (SFP+) 10 Gigabit Ethernet with Fibre Channel over Ethernet (FCoE) support.

Q. Are PCIe cards hot-swappable? How do I remove the PCIe cards from the blade?

A. No. PCIe cards are not hot-swappable. Table 2 lists the PCIe cards that are supported.

Table 2: Supported PCIe Cards

PART NUMBER	DESCRIPTION
E100-PCIE-4PGE	4-port Gigabit Ethernet PCIe card, RJ-45, for double-wide Cisco UCS E-Series
E100-PCIE10GEFCOE	1-port SFP+ PCIe card, with 10 Gigabit Ethernet FCoE support, for double-wide Cisco UCS E-Series

Q. IS RAID supported? If so, what types of RAID are supported on the single-wide and double-wide blades?

A. Yes. Hardware RAID 0 and 1 are supported on the single-wide blades and double-wide blades with PCIe cards, and RAID 0, 1, and 5 are supported on the double-wide blades without PCIe cards. A minimum of three drives are required for RAID 5 support.

Q. What is the maximum power drawn by the Cisco USB ports on the Cisco UCS-E Series blades?

A. The USB ports are designed for 500 milliamps (mA) maximum power draw (2.5W). Devices that require more power will need an external power source.

Q. What types and sizes of disks are available for the Cisco UCS E-Series Servers?

A. Please refer to the data sheet at:
http://www.cisco.com/en/US/prod/collateral/ps10265/ps12629/data_sheet_c78-705787.html.

Q. What are the CPU speeds of the processors on the single-wide and double-wide blades?

A. Please refer to the data sheet at:
http://www.cisco.com/en/US/prod/collateral/ps10265/ps12629/data_sheet_c78-705787.html.

Q. What are the various ways to interface with the Cisco IMC?

A. You can access the Cisco IMC using either the CLI commands or the IMC GUI.

Q. What boot devices are supported?

A. The supported boot devices include hard disk drives (HDDs); Secure Digital (SD) cards (by downloading an ISO using the BMC); SAN devices; USB devices (DVD/CD drives, flash drives, and HDDs); and virtual devices through the keyboard, video, and mouse (KVM) device (such as DVD drives, USB devices, and ISO files).

Q. Can I plug in external CD/DVD and hard drives?

A. Yes. You can plug in these drives using the USB connector or a dongle.

Q. Can I remove SD cards in both side-wide and double-wide blades?

A. The SD cards are not designed to be removed by the end user.

Q. Can I use the server without any RAID option?

A. Yes.

Q. How do I access internal network interfaces?

A. Both the internal interfaces can be accessed through the router.

Q. IS FCoE supported?

A. Yes. FCoE is supported on a double-wide blade with a 10 Gigabit Ethernet PCIe card.

Q. What management capabilities are built into the Cisco UCS E-Series blades?

A. The blades support Simple Network Management Protocol Version 2 (SNMPv2) and Intelligent Platform Management Interface Version 2 (IPMIv2) along with Cisco IMC support. For OS and hypervisor management, any standard tool can be used.

Q. How do I extend local storage?

A. You can extend external storage using the Network File System (NFS) or Small Computer System Interface over IP (iSCSI). You can use internal or external Gigabit Ethernet ports or 10 Gigabit Ethernet FCoE SFP+ (PCIE card).

Q. What support contracts are available for Cisco UCS-E Series Servers?

A. The Cisco UCS E-Series Servers are covered under the Cisco SMARTnet® contract for Cisco ISR G2.

Q. What software and application options do I have when I order the Cisco UCS-E Series?

A. The Cisco UCS E-Series blade supports a wide range of hypervisors and operating systems. No software is required to be ordered with the Cisco UCS E-Series.

Q. What are the methods for interfacing with the host?

A. You can interface with the host in several ways. You can access the host using the front-panel support for the monitor and keyboard, serial console redirection through the router console, or the virtual KVM.

Cisco UCS E-Series Virtualization

Q. How many virtual servers can I run on the Cisco UCS E-Series Server blades?

A. There are no specific limits on the number of virtual servers that can be hosted on the Cisco E-Series blade servers. The maximum number of virtual servers is determined by the resources assigned to each virtual server and the total hardware resources available on the specific Cisco E-Series blade server. The Cisco UCS E-Series server blades can comfortably support multiple virtual machines on both the double-wide and single-wide servers.

Q. What operating systems are supported by the Cisco UCS E-Series Servers?

A. Cisco UCS E-Series Servers are designed to support multiple bare-metal operating systems and hypervisors, including the following:

- Operating systems and Hypervisors
- Windows Server 2008 R2 , Windows 2012 R1
- Red Hat Enterprise Linux (RHEL)
- 6.2 SUSE Linux 11 SP2
- Oracle Linux Release 6 update 2
- Microsoft Hyper-V
- VMware vSphere 5.0 U1, 5.1, 5.1U1
- Citrix XenServer 6.0

Q. Why is there a maximum memory **limit on the double-wide server with VMware ESXi 5.X license FL-SRE-V-HOST preinstalled?**

A. If you order the preinstalled embedded VMware license **FL-SRE-V-HOST** (ESXi 5.X), the ordering tool allows you to add up a maximum of 32 GB of RAM because of this particular version of VMware ESXi 5.X licensing, which supports a maximum of 32 GB of physical memory in ESXi 5.X for this license class.. As a result, the configuration tools only permit a maximum of only 32 GB of memory in all double-wide Cisco UCS E140D, E140DP, E160D, and E160DP servers ordered with the preinstalled license. **If you wish to use the**

maximum memory of the double-wide servers, you must purchase the VSphere FL-SRE-V-HOST-VC ESX licensing. Again the only restriction here is VMware licensing, and this restriction is not unique to Cisco. Alternatively if you wish to purchase either Standard, Enterprise, or Enterprise Plus licensing from Cisco they will not have the 32gb limitation. Please note that these three licenses would not be pre-installed by Cisco, but are downloadable from VMware's website.

Q. What are the differences in the VMware licenses sold with Cisco UCS E-Series Servers?

A. Two types of VMware hypervisors are available to Cisco UCS E-Series customers: preinstalled (embedded) versions (FL-SRE-V-HOST and FL-SRE-V-HOST-VC) and custom images, for which Cisco sells the license, but you would download the Cisco and VMware certified version from the VMware website.

FL-SRE-V-HOST is equivalent to the free version of VMware ESXi 5.X provided directly by VMware. The software is free, but support is not. Cisco provides lifetime support for the FL-SRE-V-HOST software version, under the Cisco SMARTnet Service contract for Cisco ISR G2 routers.

FL-SRE-V-HOST-VC is the VMware vSphere Foundation version. Its features are equivalent to those in the base Essentials version (bundled to support three hosts and six CPUs) except that it does not include VMware vCenter Foundation (VMware vCenter Foundation allows management of up to three VMware vSphere hosts). It gives each host a unique serial number so that the hosts can be managed by VMware vCenter Server, which can manage up to 1,000 hosts and 10,000 running virtual machines. Cisco also supports this version.

Note that you do not have to purchase any operating system from Cisco for the Cisco UCS E-Series. The images purchased from Cisco will contain all the appropriate drivers. You may already have your own VMware licenses or want to download directly from VMware's website. However, if you download this version from VMware, support will cost a minimum of US$200 per year from VMware, and you will not receive first level support from Cisco. Cisco will not support the software if you downloaded it from VMware and did not purchase it from Cisco.

In addition to the preinstalled version, Cisco sells the licenses to the Standard, Enterprise and Enterprise plus versions as well. Customers can purchase the license from Cisco and download the Cisco custom image (with appropriate drivers) from the VMware website. The support for these images is not included as a part of Cisco SMARTnet services contract, instead supported by VMware

The feature differences are listed in Table 3.

The Table 3 contains differences between the Standard. Enterprise and enterprise plus licenses

Table 3: VMware vSphere Editions and Features

This table lists the features associated with the various licensing editions in vSphere 5.0 and 5.1:

	Essentials		Essentials Plus		Standard		Enterprise		Enterprise Plus	
	5.0	5.1	5.0	5.1	5.0	5.1	5.0	5.1	5.0	5.1
Maximum virtual SMP	8-way	8-way	8-way	8-way	8-way	8-way	8-way	32-way	32-way	64-way
Thin Provisioning	•	•	•	•	•	•	•	•	•	•
Update Manager	•	•	•	•	•	•	•	•	•	•
vStorage APIs for Data Protection	•		•	•	•	•	•	•	•	•
vCenter agent for VMware host	•	•	•	•	•	•	•	•	•	•
Storage APIs			•	•	•	•	•	•	•	•
VMsafe					•	•	•	•	•	•
vSphere API	•	•	•	•	•	•	•	•	•	•
vCenter Operations Manager Foundation		•		•		•		•		•
vSphere High Availability			•	•	•	•	•	•	•	•
vSphere Data Protection			•	•	•	•	•	•	•	•
vSphere vMotion			•	•	•	•	•	•	•	•
vSphere Storage vMotion						•	•	•	•	•
SUSE Linux Enterprise Server for VMware						•		•		•
Shared Smart Card Reader					•	•	•	•	•	•
vShield Zones				•		•	•	•	•	•
Hot Add / Hot-Pluggable virtual HW						•	•	•	•	•
vShield Endpoint			•	•	•	•	•	•	•	•
vSphere Replication				•		•		•		•
vSphere Fault Tolerance						•	•	•	•	•
vSphere DRS							•	•	•	•
MPIO / Third-Party Multi-pathing							•	•	•	•
Remote Virtual Serial Port Concentrator							•	•	•	•
vSphere Storage APIs for Array Integration							•	•	•	•
Distributed Power Management (DPM)							•	•	•	•
vSphere Distributed Switch									•	•
vSphere Host Profiles									•	•
vSphere Storage I/O Control & Network I/O Control									•	•
Direct Path vMotion									•	•
vSphere Storage DRS									•	•
vSphere Profile-Driven Storage									•	•
vSphere vMotion Metro									•	•
vSphere Auto Deploy									•	•
vSphere View Accelerator									•	•
SR-IOV										•

Microsoft Windows Server

Q. Can I run Microsoft Windows natively on Cisco UCS E-Series Servers?

A. Yes.

Cisco Integrated Services Router

Q. What happens to the Cisco UCS E-Series blade server when the router is power cycled or when the Cisco IOS® Software is reloaded?

A. When the Cisco ISR G2 is power cycled, the power to the Cisco UCS E-Series blade server is cut off and therefore automatically power cycled also. When the Cisco IOS Software is reloaded, the Cisco UCS E-Series blade server is unaffected and continues to operate normally. However, while the Cisco IOS Software is reloading, the router may not be able to communicate with the application on the blade server through the internal network interfaces, but the Ethernet front-panel port on the Cisco UCS E-Series blade server will continue to provide network connectivity when the server is wired to an external host or switch.

Q. Does placing a blade server in a router create a single point of failure?

A. The Cisco ISR G2 is designed to support a significantly higher reliability class and to tolerate more extreme environmental conditions than an average server. The typical Cisco ISR G2 mean-time-between-failures (MTBF) metric is three times higher than that for an average server. The Cisco UCS E-Series follows a similar design methodology. Therefore, although placing a server in a Cisco ISR G2 does create the potential for a single point of failure, the frequency of the failure event will be lower than on a typical server. In addition, the Cisco 3900 Series ISRs offer redundancy features such as dual power supplies to provide additional failure protection. Redundant power is also available on the Cisco 2900 Series ISRs using a Cisco Redundant Power System (RPS) external power supply. In addition, as long as the router has power, the Cisco UCS E-Series blade server will continue to function and be accessible through the **front-panel Ethernet port regardless of the router state.**

Q. Does the router need to be shut down to insert or remove a Cisco UCS E-Series blade server?

A. The Cisco 3900 Series supports online insertion and removal (OIR), which enables Cisco UCS E-Series blade servers to be hot-plugged into the chassis. The Cisco 2900 Series does not support OIR and therefore requires the router to be shut down to insert or remove a Cisco UCS E-Series blade server.

Q. Which Cisco EtherSwitch® service modules work with the multigigabit fabric (MGF) backplane switch?

A. All Cisco EtherSwitch service modules and Cisco EtherSwitch enhanced high-speed WAN interface cards (EHWICs) provide Layer 2 and 3 connectivity through MGF. Older Cisco EtherSwitch enhanced network modules (NMEs) and high-speed WAN interface card (HWIC) modules do not support the MGF backplane switch. The traffic flow between these modules and the Cisco UCS E-Series is either Layer 3 routed or Layer 2 switched, depending on whether the network interfaces are in the same VLAN segment or in different VLAN segments.

Q. What Cisco IOS Software release is required to support the Cisco SRE Modules the Cisco UCS-E Series?

A. Cisco IOS Software Release 15.2(4)M is required for Cisco 2911, 2921, 2951, 3925, 3925E, 3945, and 3945E ISRs. . For 4451-X IOS XE 3.10 is required.

Q. Where can I get more information about the Cisco UCS E-Series servers?

A. Refer to http://www.cisco.com/go/ucse for more information.

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