

Cisco UCS E-Series Compatibility and Ordering Guide

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1. Introduction

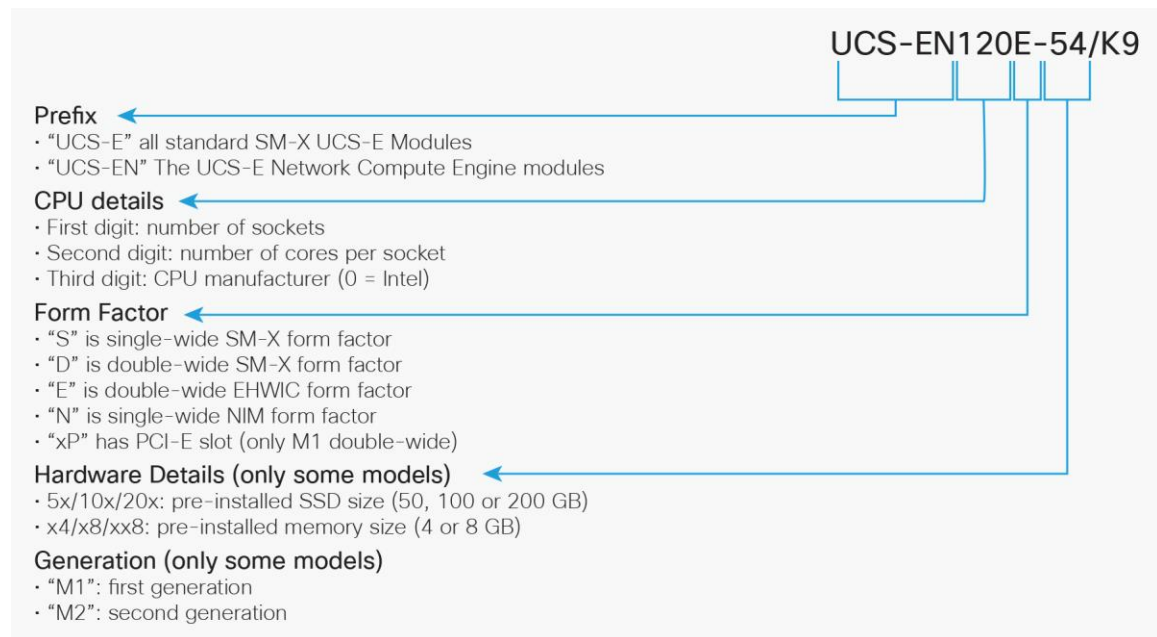
Cisco UCS E-Series offers a converged compute and networking platform built to host essential infrastructure services and mission-critical business applications in the branch office. It consists of the following:

- Cisco Unified Computing System™ (Cisco UCS®) E-Series Servers and Network Compute Engines (NCEs)
- Cisco 1900, 2900, 3900, and 4000 Series Integrated Services Routers (ISRs)

Cisco UCS E-Series Servers are Intel Xeon x86 64-bit blade servers installed in the external module slots of the ISR. The Cisco UCS E-Series Server Family offers several choices with various hard drive and memory configurations, with a single fixed-CPU configuration.

The Cisco UCS E-Series modules are orderable as options under an ISR or as spares. Refer to the product data sheet to review the different form factors and compatibility with various ISR models.

2. Product Name Explanation



3. Cisco UCS E-Series Top-Level Part Numbers

Table 1 lists top-level part numbers for Cisco UCS E-Series Servers.

Table 1. Part Numbers for Cisco UCS E-Series Servers

Cisco UCS E-Series	Cores	DIMM Slots	RAM (GB)	Disks	HDD Options
NIM and EHWIC (fixed) form factor:					
UCS-EN120E-54/K9(=)	2	1	4 GB	1	Fixed 50 GB SSD
UCS-EN120E-58/K9(=)	2	1	8 GB	1	Fixed 50 GB SSD
UCS-EN120E-108/K9(=)	2	1	8 GB	1	Fixed 100 GB SSD
UCS-EN120E-208/K9(=)	2	1	8 GB	1	Fixed 200 GB SSD
UCS-EN140N-M2/K9(=)	4	1	8 GB	1	50-200 GB SSD
Single-Wide Service Module (SW SM) Servers					
UCS-EN120S-M2/K9(=)	2	2	4 – 16 GB	2	SATA/SAS
UCS-E140S-M2/K9(=)	4	2	8 – 16 GB	2	SATA/SAS/SED/SSD

Cisco UCS E-Series	Cores	DIMM Slots	RAM (GB)	Disks	HDD Options
UCS-E160S-M3/K9(=)	6	2	8 – 64 GB	2	SATA/SAS/SED/SSD
Double-Wide Service Module (DW SM) Servers					
UCS-E160D-M2/K9(=)	6	3	8 – 96 GB	3	SATA/SAS/SED/SSD
UCS-E180D-M2/K9(=)	8	3	8 – 96 GB	3	SATA/SAS/SED/SSD
UCS-E180D-M3/K9(=)	8	4	8 – 128 GB	4	SATA/SAS/SED/SSD
UCS-E1120D-M3/K9(=)	12	4	8 – 128 GB	4	SATA/SAS/SED/SSD

All the modules above, except M3, contain the low est allow ed RAM in their default configuration. For M3, the default RAM is 16 GB.

4. Memory Options

Refer to Table 2 to determine the RAM capacity and number of dual-inline-memory-module (DIMM) slots per module, and Table 3 to determine the memory options. All modules come standard with the minimum supported RAM. The memory in the fixed (NIM and EHWIC) models cannot be upgraded..

Table 2. Spare Cisco UCS E-Series Memory Options

Memory Part Numbers	Description
EM3-MEM-8G(=)	8 GB 1067 MHz VLP RDIMM/PC4-2133 1R DDR4 RAM for single-wide and double-wide UCS-E M3
EM3-MEM-16G(=)	16 GB 1200 MHz VLP RDIMM/PC4-2400 1R DDR4 RAM for single-wide and double-wide UCS-E M3
EM3-MEM-32G(=)	32 GB 1333MHz VLP PC3-10600 2R DDR4 RAM for single-wide and double-wide UCS-E M3
E100S-MEM-UDIMM4G(=)	4 GB 667 MHz VLP UDIMM/PC3-10600 2R for single-wide UCS-E
E100S-MEM-UDIMM8G(=)	8 GB 667 MHz VLP UDIMM/PC3-10600 2R for single-wide UCS-E
E100D-MEM-RDIMM4G(=)	4 GB 667 MHz RDIMM/PC3-10600 2R for double-wide UCS-E
E100D-MEM-RDIMM8G(=)	8 GB 667 MHz RDIMM/PC3-10600 2R for double-wide UCS-E
E100D-MEM-RDIM16G(=)	16 GB 667 MHz RDIMM/PC3-10600 2R for double-wide UCS-E
E100D-MEM-RDIM32G(=)	32 GB 667 MHz RDIMM/PC3-10600 2R for double-wide UCS-E

Table 3. Memory to Cisco UCS E-Series Compatibility Matrix

Memory Part Numbers	Single-Wide Servers			Double-Wide Servers			
	UCS-EN120S-M2/K9(=)	UCS-E140S-M2/K9(=)	UCS-E160S-M3/K9(=)	UCS-E160D-M2/K9(=)	UCS-E180D-M2/K9(=)	UCS-E180D-M3/K9(=)	UCS-E1120D-M3/K9(=)
EM3-MEM-8G(=)	0	0	2	0	0	4	4
EM3-MEM-16G(=)	0	0	2	0	0	4	4
EM3-MEM-32G(=)	0	0	2	0	0	4	4
E100S-MEM-UDIMM4G(=)	2	2	0	0	0	0	0
E100S-MEM-UDIMM8G(=)	0	2	0	0	0	0	0
E100D-MEM-RDIMM4G(=)	0	0	0	3	3	0	0
E100D-MEM-RDIMM8G(=)	0	0	0	3	3	0	0
E100D-MEM-RDIM16G(=)	0	0	0	3	3	0	0
E100D-MEM-RDIM32G(=)	0	0	0	3	3	0	0

5. Storage Options

Refer to Table 4 to determine the number of disk bays supported on each module. Except for the Cisco UCS-EN120E, the storage option is not included by default, and you must select at least one drive. On the single- and double-wide SMs, the disks are accessible externally and are hot-swappable. The single-wide SMs use a different carrier card than the double-wide SMs, but the hard disks inside are identical and it is possible to swap the carrier card from a SW to a DW, and vice versa.

The PIDs starting with E100S (for example: E100S-HDD-SATA1T=) will come in a SW carrier card.

The PIDs starting with E100D (for example: E100D-HDD-SATA1T=) will come in a DW carrier card.

The Cisco UCS E-Series EHWIC form factor server disks are not field replaceable.

The Cisco UCS E-Series NIM form factor server has the mSATA options listed in Table 4.

Table 4. mSATA Options

Disk Part Numbers	Description
E100N-SSD-50G(=)	50 GB, mSATA SSD for NCE NIM
E100N-SSD-100G(=)	100 GB, mSATA SSD for NCE NIM
E100N-SSD-200G(=)	200 GB, mSATA SSD for NCE NIM

Table 5 lists the disks that are available for single- and double-wide Cisco UCS E-Series Servers.

Table 5. Available Disks for Single- and Double-wide Cisco UCS E-Series Servers

Disk Part Numbers	Description
E100[S,D]-HDD-SATA1T(=)	1 TB, SATA hard disk drive
E100[S,D]-HDD-SATA2T(=)	2 TB, SATA hard disk drive
E100[S,D]-HDD-SAS900G(=)	900 GB, SAS hard disk drive
E100[S,D]-SED-12T(=)	1.2 TB, SAS self-encrypting hard disk drive
E100[S,D]-HDD-SAS18T(=)	1.8 TB, SAS hard disk drive
E100[S,D]-SSD-480G(=)	480 GB, SAS eMLC SSD drive
E100[S,D]-SSD-960G(=)	960 GB, SAS eMLC SSD drive
E100[S,D]-SSD-4T(=)	4 TB, SAS eMLC SSD drive

Note: The [S, D] determines which carrier card the drives come in. Table 6 shows the hard disks compatible with each Cisco UCS E-Series Server model.

Table 6. Hard Disk to Cisco UCS E-Series Server Compatibility Table

Hard Disk Part Numbers	Single-Wide Servers			Double-Wide Servers			
	UCS-EN120S-M2/K9(=)	UCS-E140S-M2/K9(=)	UCS-E160S-M3/K9(=)	UCS-E160D-M2/K9(=)	UCS-E180D-M2/K9(=)	UCS-E180D-M3/K9(=)	UCS-E120D-M3/K9(=)
E100[S,D]-HDD-SATA1T(=)	2	2	2	3	3	4	4
E100[S,D]-HDD-SATA2T(=)	0	2	2	3	3	4	4

Hard Disk Part Numbers	Single-Wide Servers			Double-Wide Servers			
	UCS-EN120S-M2/K9(=)	UCS-E140S-M2/K9(=)	UCS-E160S-M3/K9(=)	UCS-E160D-M2/K9(=)	UCS-E180D-M2/K9(=)	UCS-E180D-M3K9(=)	UCS-E1120D-M3/K9(=)
E100[S,D]-SED-12T(=)	0	2	2	3	3	4	4
E100[S,D]-HDD-SAS900G(=)	2	2	2	3	3	4	4
E100[S,D]-HDD-SAS18T(=)	0	2	0	3	3	4	4
E100[S,D]-SSD-480G(=)	0	2	2	3	3	4	4
E100[S,D]-SSD-960G(=)	0	2	2	3	3	4	4
E100[S,D]-SSD-4T(=)	0	0	2	3	3	4	4

6. RAID Configuration Options

Refer to Table 1 to determine the number of disk bays supported on each module. On modules with multiple disk options, Redundant Array of Independent Disks (RAID) may be configured during ordering or later during the software installation. By default, Cisco UCS E-Series Servers do not come configured in RAID mode. Refer to the Cisco UCS E-Series Servers installation and configuration guide to set up or modify RAID configuration (http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/e/hw/e_series_install.html). The Cisco UCS E-Series NIM and EHWIC servers use a single disk and therefore don't support RAID. Table 7 lists the RAID options that are available for the SW SM and DW SM Cisco UCS E-Series Servers.

Table 7. Cisco UCS E-Series RAID Options

RAID Options	Description	Required # Disks
DISK-MODE-RAID-0	Configure hard drives as RAID 0 (Stripe)	2
DISK-MODE-RAID-1	Configure hard drives as RAID 1 (Mirror)	2
DISK-MODE-RAID1JBD	Configure two hard drives in RAID 1 configuration and third non-RAID	3
DISK-MODE-RAID-5	Configure hard drives as RAID 5	3
DISK-MODE-RAID5JBD	Configure 3 hard drives as RAID 5, and 4 th drives as non-RAID	4
DISK-MODE-RAID-10	Configure hard drives as RAID 10	4

7. Secure Digital Card Options (M2 only)

Cisco UCS E-Series SW SMs and DW SMs contain two secure digital (SD) card slots. The Cisco IMC software is stored on one of the two 8-GB secure digital cards that come standard with the blade. The second secure digital card is optional. Table 8 lists the secure digital card options for the Cisco UCS E-Series Servers.

Table 8. Cisco UCS E-Series Secure Digital Card Options

Options	Description
E100-SD-2G(=)	2 GB SD Card for UCS-EN
E100-SD-2-4UPG	Upgrade from 2 GB to 4 GB SD Card for UCS-EN
E100-SD-4-8UPG	Upgrade to 8 GB E100-SD-2G
E100-SD-8G(=)	8 GB SD Card for UCS-E

The M3 servers contain integrated eMMC storage that is not user configurable. There is a 8GB partition for Cisco IMC and 8GB partition for the x86 host.

8. Ordering VMware vSphere Through Cisco

The VMware virtualization software consists of two components: the central management (vCenter) and the hypervisor (vSphere, also known as ESXi) per host. Both components have different license levels. VMware offers additional software management tools, which are outside the scope of this ordering guide.

vCenter has to be purchased directly from VMware and comes in two license options: Essentials and Standard. vCenter Essentials can manage only three hosts and is limited to hypervisors running the Essentials or Essentials Plus license level. This license level is not supported on Cisco UCS E-Series Servers, and therefore vCenter Standard is the only option for the central management component.

The hypervisor comes in five different license levels, which are shown in Figure 1.

Figure 1. vSphere License Options

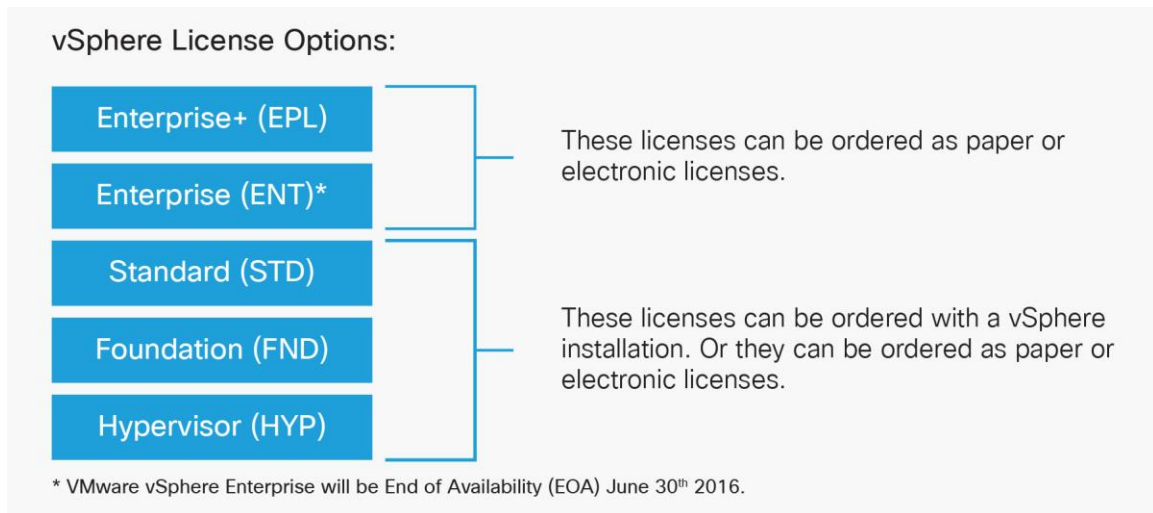


Table 9 lists the feature differences between the individual licenses.

Table 9. Features of Each vSphere License Level

vSphere 6 - Editions	vCenter Required	Hypervisor (HYP)	Foundation (FND)	Standard (STD)	Enterprise+ (EPL)
Product Components					
vCenter Agent [vCenter Management Enabled]		x	✓	✓	✓
h264Remote		x	✓	✓	✓
vimAPI - vSphere APIs		R/O	✓	✓	✓
vStorage - Storage APIs		x	✓	✓	✓
vmSafe		x	✓	✓	✓
vSphere Integrated Containers [v6.5]		x	x	x	✓
Product Features					
Business Continuity and Security					
vMotion	✓	x	x	✓	✓
Storage vMotion	✓	x	x	✓	✓
High Availability	✓	x	x	✓	✓
Data Protection	✓	x	x	✓	✓

vSphere 6 - Editions	vCenter Required	Hypervisor (HYP)	Foundation (FND)	Standard (STD)	Enterprise+ (EPL)
Fault Tolerance	✓	x	x	2 - vCPU	4 - vCPU
vShield Endpoint	✓	x	x	✓	✓
vSphere Replication	✓	x	x	✓	✓
Virtual Machine Encryption [v6.5]	✓	x	x	x	✓
Hot Add	✓	x	x	✓	✓
Resource Prioritization & Enhanced Application Performance					
Virtual Volumes	✓	x	x	✓	✓
Storage Policy Based Management	✓	x	x	✓	✓
Reliable Memory	✓	x	x	x	✓
Big Data Extensions	✓	x	x	x	✓
Virtual Serial Port Concentrator	✓	x	x	x	✓
Distributed Resource Scheduler [DRS]	✓	x	x	x	✓
Distributed Power Management [DPM]	✓	x	x	x	✓
Storage DRS	✓	x	x	x	✓
Storage I/O Control	✓	x	x	x	✓
Network I/O Control	✓	x	x	x	✓
Single Root I/O Virtualization (SR-IOV) Support	✓	x	x	x	✓
Proactive HA[v6.5]	✓	x	x	x	✓
Predictive DRS [v6.5]	✓	x	x	x	✓
Automated Administration & Provisioning					
Content Library	✓	x	x	✓	✓
Storage API's for Array Integration, Multipathing	✓	x	x	✓	✓
Distributed Switch	✓	x	x	x	✓
Host Profiles	✓	x	x	x	✓
Auto Deploy	✓	x	x	x	✓

To see the differences between the vSphere versions, refer to the following links:

[What's new in ESXi 5.5?](#)

[What's new in ESXi 6.0?](#)

[What's new in ESXi 6.5?](#)

In Cisco Commerce Workspace, the following options are available for spare Cisco UCS E-Series modules, as well as for ISRs purchased with Cisco UCS E-Series modules:

VMware – Customer Installed

If any of these options are selected, the vSphere key is shipped as a printout on paper. All vSphere license levels are available and a service contract is required. The service can be added for up to five years.

VMware – Cisco Preinstalled

In this case the vSphere software is preinstalled on the blade. Only the Hypervisor, Foundation, and Standard licenses are available.

VMware Support

For FL-SRE and FL-UCSE licenses, there is a mandatory attach of one year of support, which is automatically added during the ordering process. If the license was purchased through Cisco, Cisco Technical Assistance Center (TAC) is the primary source of support. This is true for all license options described above.

9. Bare-Metal OS and Hypervisor Provisioning

Cisco UCS E-Series Servers can be factory provisioned with Microsoft Windows Server 2012 or VMware vSphere. You can install other bare-metal operating systems such as Red Hat Linux and SUSE Linux, or other hypervisors such as Microsoft Hyper-V Windows Server and Citrix XenServer.

Table 10 lists the software options for the Cisco UCS E-Series Servers.

Table 10. Cisco UCS E-Series Software Options

Product ID (PID)	Description
MSWS-2012R2ST-E	Windows Server 2012 R2 Standard 64-bit for UCS E Series
VMware – Customer Installed vSphere ESXi Software and License	
VMW-VSP-EPL-1A	VMware vSphere Enterprise Plus (1 CPU), 1 year, support required
VMW-VSP-EPL-2A	VMware vSphere Enterprise Plus (1 CPU), 2 year, support required
VMW-VSP-EPL-3A	VMware vSphere Enterprise Plus (1 CPU), 3 year, support required
VMW-VSP-EPL-4A	VMware vSphere Enterprise Plus (1 CPU), 4 year, support required
VMW-VSP-EPL-5A	VMware vSphere Enterprise Plus (1 CPU), 5 year, support required
VMware – Cisco Preinstalled vSphere ESXi Software and License	
FL-SRE-V-HOST	UCS E-Series VMware ESXi 5 Hypervisor License
FL-SRE-V-HOSTVC	UCS E-Series VMware ESXi 5 Hypervisor License (with vCenter Server Agent)
FL-UCSE-VS6-HYP	UCS E-Series VMware ESXi 6 Hypervisor License
FL-UCSE-VS6-FND	UCS E-Series VMware ESXi 6 Foundation License (with vCenter Server Agent)
FL-UCSE-VS6-STD	UCS E-Series VMware ESXi 6 Standard License (with vCenter Server Agent)
VMware – Cisco Preinstalled Software	
SW-UCSE-VM-5.5-K9	VMware vSphere Hypervisor (ESXi) v5.5 software
SW-UCSE-VM-6.0-K9	VMware vSphere Hypervisor (ESXi) v6.0 software
SW-UCSE-VM-6.5-K9	VMware vSphere Hypervisor (ESXi) v6.5 software
VMware – OS Install Drive (M3 only)	
INSTALL-OS-FLASH	Installs the Hypervisor on the integrated eMMC 8GB partition
INSTALL-OS-HDD	Installs the Hypervisor on the hard drives or RAID volume. [Default]
NFVIS - Software Version	
SW-NFVIS-3.0-K9	Cisco NFVIS v3.5
SW-NFVIS-3.6-K9	Cisco NFVIS v3.6

10. Preinstalled Applications

Some of the Cisco network applications that are widely deployed in branch offices, such as WAN optimization and the Enterprise Content Delivery System (ECDS), can now be preinstalled on the Cisco UCS E-Series Servers. You can also select a trial version of the Cisco EnergyWise® license to be shipped with the product.

11. ISR Compatibility

Table 11 shows compatibility information for the Cisco Integrated Services Routers.

Table 11. ISR Compatibility

ISR Models	EHWIC				NIM	SW SM			DW SM			
	UCS-EN120E-54/K9	UCS-EN120E-58/K9	UCS-EN120E-108/K9	UCS-EN120E-208/K9	UCS-EN140N-M2/K9	UCS-EN120S-M2/K9(=)	UCS-E140S-M2/K9(=)	UCS-E160S-M3/K9(=)	UCS-E160D-M2/K9(=)	UCS-E180D-M2/K9(=)	UCS-E180D-M3/K9(=)	UCS-E1120D-M3/K9(=)
1921	1	1	1	1	0	0	0	0	0	0	0	0
1941	1	1	1	1	0	0	0	0	0	0	0	0
2901	2	2	2	2	0	0	0	0	0	0	0	0
2911	2	2	2	2	0	1	1	0	0	0	0	0
2921	2	2	2	2	0	1	1	0	1	0	0	0
2951	2	2	2	2	0	2	2	0	1	0	0	0
3925	2	2	2	2	0	2	2	0	1	1	0	0
3945	2	2	2	2	0	4	4	0	1	1	0	0
3925E	1	1	1	1	0	2	2	0	1	1	0	0
3945E	1	1	1	1	0	4	4	0	1	1	0	0
4321	0	0	0	0	2	0	0	0	0	0	0	0
4331	0	0	0	0	3*	1	1	1	0	0	0	0
4351	0	0	0	0	5*	2	2	2	1	1	1	1
4431	0	0	0	0	3	0	0	0	0	0	0	0
4451	0	0	0	0	5*	2	2	2	1	1	1	1

* The Cisco UCS E-Series NIM can be used in the SM-X to NIM adapter

The minimum Cisco IOS® Software version for each module and ISR can be found in the Cisco UCS E-Series data sheets.

12. More Information

For more information about the Cisco UCS E-Series Servers, visit <http://www.cisco.com/go/ucse/> or contact your local Cisco account representative.

For more information about Cisco products, contact:

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