



Cisco components

FlexPod

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Cisco components

Cisco has contributed substantially to the FlexPod design and architecture, covering both the compute and networking layers of the solution. This section describes the Cisco UCS and Cisco Nexus options that are available for FlexPod. FlexPod supports both Cisco UCS B-Series and C-Series servers.

Cisco UCS fabric interconnect options

Redundant fabric interconnects are required in the FlexPod architecture. When you add multiple Cisco UCS chassis to a pair of fabric interconnects, remember that the maximum number of chassis in an environment is determined by both an architectural and a port limit.

The part numbers that are shown in the following table are for the base fabric interconnects. They do not include the power supply unit (PSU) or SFP+, QSFP+, or expansion modules. Additional fabric interconnects are supported; see the [NetApp IMT](#) for a complete list.

Cisco UCS fabric interconnect	Part number	Technical specifications
Cisco UCS 6332UP	UCS-FI-6332-UP	Cisco UCS 6332 Fabric Interconnect
Cisco UCS 6454	UCS-FI-6454-U	Cisco UCS 6454 Fabric Interconnect

Cisco UCS 6454

The Cisco UCS 6454 Series offers line-rate, low-latency, lossless 10/25/40/100GbE Ethernet and FCoE connectivity, as well as unified ports that are capable of either Ethernet or FC operation. The 44 10/25Gbps ports can operate as 10Gbps or 25Gbps converged Ethernet, of which eight are unified ports capable of operating at 8/16/32Gbps for FC. Four ports operate at 1/10/25Gbps for legacy connectivity, and six QSFP ports serve as 40/100Gbps uplink ports or breakout ports. You can establish 100Gbps end-to-end network connectivity with NetApp storage controllers that support 100Gbps adapters. For adapters and platform support, see the [NetApp Hardware Universe](#).

For details about ports, see the [Cisco UCS 6454 Fabric Interconnect Datasheet](#).

For technical specifications about the 100Gb QSFP data modules, see the [Cisco 100GBASE QSFP Modules Datasheet](#).

Cisco UCS B-Series chassis option

To use Cisco UCS B-Series blades, you must have a Cisco UCS B-Series chassis. The table below describes the Cisco UCS B-Series chassis option.

Cisco UCS B-Series chassis	Part number	Technical specifications
Cisco UCS 5108	N20-C6508	Cisco UCS 5100 Series Blade Server Chassis

Each Cisco UCS 5108 blade chassis must have two Cisco UCS 2200/2300/2400 Series IOMs to provide redundant connectivity to the fabric interconnects.

Cisco UCS B-Series blade server options

Cisco UCS B-Series Blade Servers are available in half-width and full-width varieties, with various CPU, memory, and I/O options. The part numbers that are listed in the following table are for the base server. They do not include the CPU, memory, drives, or mezzanine adapter cards. Multiple configuration options are available and are supported in the FlexPod architecture.

Cisco UCS B-Series blade	Part number	Technical specifications
Cisco UCS B200 M5	UCSB-B200-M5	Cisco UCS B200 M5 Blade Server
Cisco UCS B480 M5	UCSB-B480-M5	Cisco UCS B480 M5 Blade Server

Previous generations of Cisco UCS B-Series blades can be used in the FlexPod architecture, if they are supported on the [Cisco UCS Hardware and Software Compatibility List](#). The Cisco UCS B-Series Blade Servers must also have a valid SmartNet support contract.

Cisco UCS C-Series rack server options

Cisco UCS C-Series Rack Servers are available in one-, two-, and four-rack unit (RU) varieties, with various CPU, memory, and I/O options. The part numbers that are listed in the second table below are for the base server. They do not include CPUs, memory, drives, Peripheral Component Interconnect Express (PCIe) cards, or the Cisco Fabric Extender. Multiple configuration options are available and are supported in the FlexPod architecture.

To use Cisco UCS C-Series Rack Server nodes, you must have a Cisco UCS C-Series chassis as illustrated in the first table below.

Cisco UCS C-Series chassis	Part number	Technical specifications
Cisco UCS C4200	UCSC-C4200-SFF	Cisco UCS C4200 Series Rack Server Chassis

The table below describes the Cisco UCS C-Series Rack Server options.

Cisco UCS C-Series rack server	Part number	Technical specifications
Cisco UCS C220 M5	UCSC-C220-M5SN	Cisco UCS C220 M5 Rack Server
Cisco UCS C240 M5	UCSC-C240-M5S	Cisco UCS C240 M5 Rack Server
Cisco UCS C480 M5	UCSC-C480-M5	Cisco UCS C480 M5 Rack Server
Cisco UCS C480 ML M5	UCSC-C480-M5ML8	Cisco UCS C480 ML M5 Rack Server
Cisco UCS C125 M5	UCSC-C125	Cisco UCS C125 M5 Rack Server Node

Previous generations of Cisco UCS C-Series servers can be used in the FlexPod architecture, if they are supported on the [Cisco UCS Hardware and Software Compatibility List](#). The Cisco UCS C-Series servers must also have a valid SmartNet support contract.

Cisco Nexus 5000 Series switch options

Redundant Cisco Nexus 5000, 7000, or 9000 Series Switches are required in the FlexPod architecture. The part numbers that are listed in the table below are for the Cisco Nexus 5000 Series chassis; they do not include SFP modules, add-on FC, or Ethernet modules.

Cisco Nexus 5000 Series switch	Part number	Technical specifications
Cisco Nexus 56128P	N5K-C56128P	Cisco Nexus 5600 Platform Switches
Cisco Nexus 5672UP-16G	N5K-C5672UP-16G	
Cisco Nexus 5596UP	N5K-C5596UP-FA	Cisco Nexus 5548 and 5596 Switches
Cisco Nexus 5548UP	N5K-C5548UP-FA	

Cisco Nexus 7000 series switch options

Redundant Cisco Nexus 5000, 7000, or 9000 Series Switches are required in the FlexPod architecture. The part numbers that are listed in the table below are for the Cisco Nexus 7000 Series chassis; they do not include SFP modules, line cards, or power supplies, but they do include fan trays.

Cisco Nexus 7000 Series Switch	Part number	Technical specifications
Cisco Nexus 7004	N7K-C7004	Cisco Nexus 7000 4-Slot Switch
Cisco Nexus 7009	N7K-C7009	Cisco Nexus 7000 9-Slot Switch
Cisco Nexus 7702	N7K-C7702	Cisco Nexus 7700 2-Slot Switch
Cisco Nexus 7706	N77-C7706	Cisco Nexus 7700 6-Slot Switch

Cisco Nexus 9000 series switch options

Redundant Cisco Nexus 5000, 7000, or 9000 Series Switches are required in the FlexPod architecture. The part numbers that are listed in the table below are for the Cisco Nexus 9000 Series chassis; they do not include SFP modules or Ethernet modules.

Cisco Nexus 9000 Series Switch	Part Number	Technical Specifications
Cisco Nexus 93180YC-FX	N9K-C93180YC-FX	Cisco Nexus 9300 Series Switches
Cisco Nexus 93180YC-EX	N9K-93180YC-EX	
Cisco Nexus 9336PQ ACI Spine	N9K-C9336PQ	
Cisco Nexus 9332PQ	N9K-C9332PQ	
Cisco Nexus 9336C-FX2	N9K-C9336C-FX2	
Cisco Nexus 92304QC	N9K-C92304QC	Cisco Nexus 9200 Series Switches
Cisco Nexus 9236C	N9K-9236C	



Some Cisco Nexus 9000 Series Switches have additional variants. These variants are supported as part of the FlexPod solution. For the complete list of Cisco Nexus 9000 Series Switches, see [Cisco Nexus 9000 Series Switches](#) on the Cisco website.

Cisco APIC options

When deploying Cisco ACI, you must configure the three Cisco APICs in addition to the items in the section [Cisco Nexus 9000 Series Switches](#). For more information about the Cisco APIC sizes, see the [Cisco Application Centric Infrastructure Datasheet](#).

For more information about APIC product specifications refer to Table 1 through Table 3 on the [Cisco Application Policy Infrastructure Controller Datasheet](#).

Cisco Nexus fabric extender options

Redundant Cisco Nexus 2000 Series rack-mount FEXs are recommended for large FlexPod architectures that use C-Series servers. The table below describes a few Cisco Nexus FEX options. Alternate FEX models are also supported. For more information, see the [Cisco UCS Hardware and Software Compatibility List](#).

Cisco Nexus rack-mount FEX	Part number	Technical specifications
Cisco Nexus 2232PP	N2K-C2232PP	Cisco Nexus 2000 Series Fabric Extenders
Cisco Nexus 2232TM-E	N2K-C2232TM-E	
Cisco Nexus 2348UPQ	N2K-C2348UPQ	Cisco Nexus 2300 Platform Fabric Extenders
Cisco Nexus 2348TQCisco Nexus 2348TQ-E	N2K-C2348TQN2K-C2348TQ-E	

Cisco MDS options

Cisco MDS switches are an optional component in the FlexPod architecture. Redundant SAN switch fabrics are required when you implement the Cisco MDS switch for FC SAN. The table below lists the part numbers and details for a subset of the supported Cisco MDS switches. See the [NetApp IMT](#) and [Cisco Hardware and Software Compatibility List](#) for a complete list of supported SAN switches.

Cisco MDS 9000 series switch	Part number	Description
Cisco MDS 9148T	DS-C9148T-24IK	Cisco MDS 9100 Series Switches
Cisco MDS 9132T	DS-C9132T-MEK9	
Cisco MDS 9396S	DS-C9396S-K9	Cisco MDS 9300 Series Switches

Cisco software licensing options

Licenses are required to enable storage protocols on the Cisco Nexus switches. The Cisco Nexus 5000 and 7000 Series of switches all require a storage services license to enable the FC or FCoE protocol for SAN boot implementations. The Cisco Nexus 9000 Series Switches currently do not support FC or FCoE.

The required licenses and the part numbers for those licenses vary depending on the options that you select for each component of the FlexPod solution. For example, software license part numbers vary depending on the number of ports and which Cisco Nexus 5000 or 7000 Series Switches you choose. Consult your sales representative for the exact part numbers. The table below lists the Cisco software licensing options.

Cisco software licensing	Part number	License information
Cisco Nexus 5500 Storage License, 8-, 48-, and 96-port	N55-8P-SSK9/N55-48P-SSK9/N55-96P-SSK9	Licensing Cisco NX-OS Software Features
Cisco Nexus 5010/5020 Storage Protocols License	N5010-SSK9/N5020-SSK9	
Cisco Nexus 5600 Storage Protocols License	N56-16p-SSK9/N5672-72P-SSK9/N56128-128P-SSK9	
Cisco Nexus 7000 Storage Enterprise License	N7K-SAN1K9	
Cisco Nexus 9000 Enterprise Services License	N95-LAN1K9/N93-LAN1K9	

Cisco support licensing options

Valid SmartNet support contracts are required on all Cisco equipment in the FlexPod architecture.

The required licenses and the part numbers for those licenses must be verified by your sales representative because they can vary for different products. The table below lists the Cisco support licensing options.

Cisco Support licensing	License guide
Smart Net Total Care Onsite Premium	Cisco Smart Net Total Care Service

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