

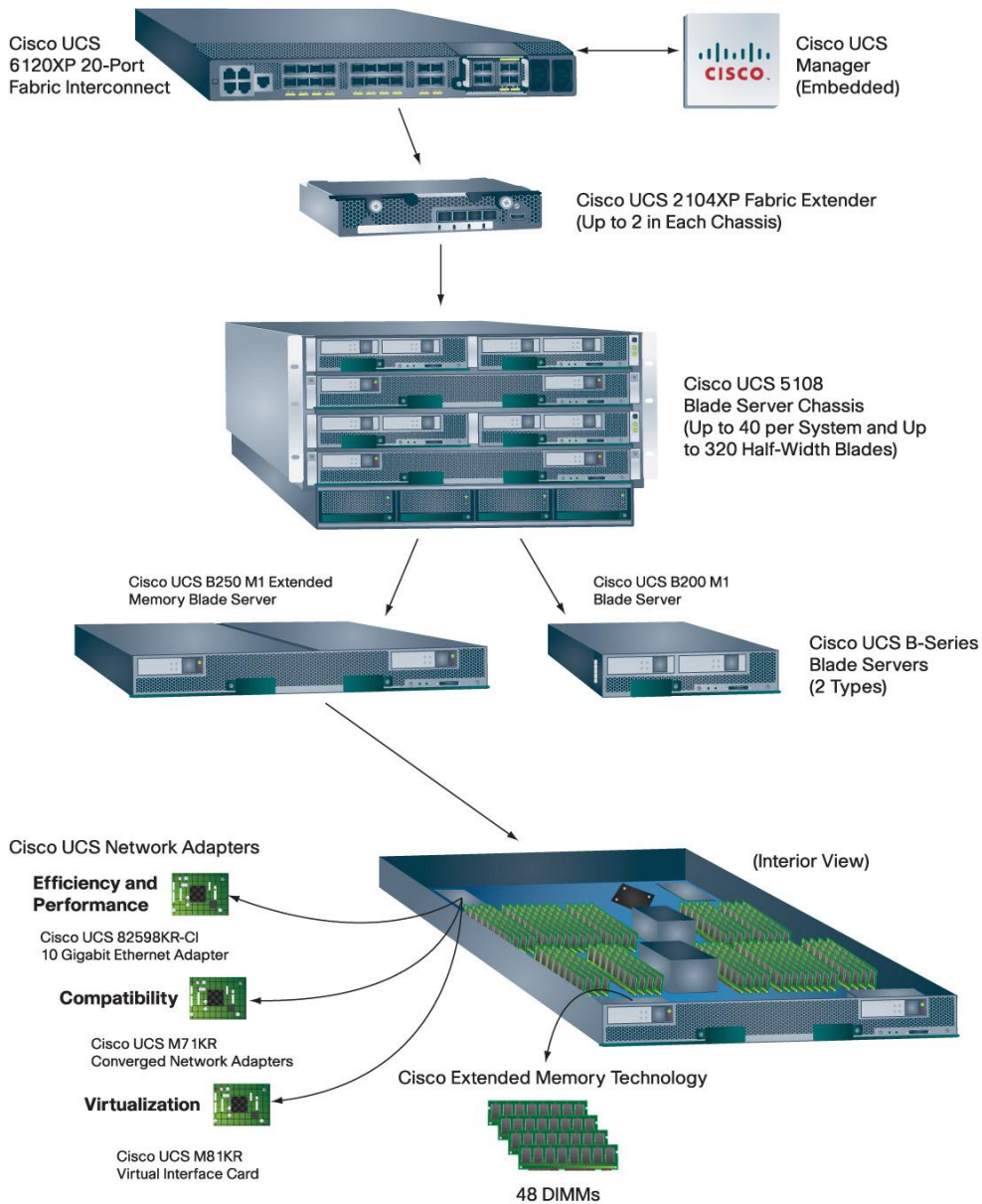
Cisco UCS 2100 Series Fabric Extenders



Cisco Unified Computing System Overview

The Cisco[®] Unified Computing System is a next-generation data center platform that unites compute, network, storage access, and virtualization into a cohesive system designed to reduce total cost of ownership (TCO) and increase business agility. The system integrates a low-latency, lossless 10 Gigabit Ethernet unified network fabric with enterprise-class, x86-architecture servers. The system is an integrated, scalable, multichassis platform in which all resources participate in a unified management domain (Figure 1).

Figure 1. The Cisco Unified Computing System Is a Highly Available Cohesive Architecture



Product Overview

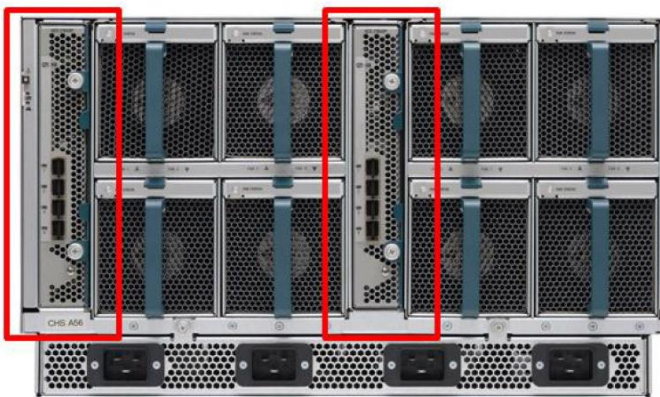
Cisco UCS 2100 Series Fabric Extenders bring the unified fabric into the blade server enclosure, providing 10 Gigabit Ethernet connections between blade servers and the fabric interconnect, simplifying diagnostics, cabling, and management.

The Cisco UCS 2100 Series extends the I/O fabric between the Cisco UCS 6100 Series Fabric Interconnects and the Cisco UCS 5100 Series Blade Server Chassis, enabling a lossless and deterministic Fibre Channel over Ethernet (FCoE) fabric to connect all blades and chassis together. Since the fabric extender is similar to a distributed line card, it does not do any switching and is managed as an extension of the fabric interconnects. This approach removes switching from the chassis, reducing overall infrastructure complexity and enabling the Cisco Unified Computing System to scale to many chassis without multiplying the number of switches needed, reducing TCO and allowing all chassis to be managed as a single, highly available management domain.

The Cisco 2100 Series also manages the chassis environment (the power supply and fans as well as the blades) in conjunction with the fabric interconnect. Therefore, separate chassis management modules are not required.

Cisco UCS 2100 Series Fabric Extenders fit into the back of the Cisco UCS 5100 Series chassis. Each Cisco UCS 5100 Series chassis can support up to two fabric extenders, enabling increased capacity as well as redundancy (Figure 2).

Figure 2. Rear of Cisco UCS 5108 Blade Server Chassis with Two Cisco UCS 2104XP Fabric Extenders Inserted



Cisco UCS 2104XP Fabric Extender

The first product in the Cisco UCS 2100 Series is the Cisco UCS 2104XP Fabric Extender (Figure 3). It has four 10 Gigabit Ethernet, FCoE-capable, Small Form-Factor Pluggable Plus (SFP+) ports that connect the blade chassis to the fabric interconnect. Each Cisco UCS 2104XP has eight 10 Gigabit Ethernet ports connected through the midplane to each half-width slot in the chassis. Typically configured in pairs for redundancy, two fabric extenders provide up to 80 Gbps of I/O to the chassis.

Figure 3. Cisco UCS 2104XP Fabric Extender



Features and Benefits

Table 1 summarizes the main features and benefits of the Cisco UCS 2100 Series.

Table 1. Features and Benefits

Feature	Benefit
Management by Cisco UCS Manager	<ul style="list-style-type: none"> Reduces TCO by removing management modules from the chassis, making the chassis stateless Provides a single, highly available management domain for all system chassis, reducing administrative tasks
Autoconfiguration	Simplifies operation by automatically synchronizing firmware levels between the fabric extenders and the interconnects
Unified fabric	<ul style="list-style-type: none"> Decreases TCO by reducing the number of network interface cards (NICs), host bus adapters (HBAs), switches, and cables needed Transparently encapsulates Fibre Channel packets into Ethernet
Automatic failover	Increases availability with an active-active data plane
Scalable bandwidth	Reduces TCO by optimizing overall system capacity to match actual workload demands
Environmental monitoring	Removes the need for chassis management modules
Lossless fabric	Provides a reliable, robust foundation for unifying LAN and SAN traffic on a single transport
Priority flow control (PFC)	<ul style="list-style-type: none"> Simplifies management of multiple traffic flows over a single network link Supports different classes of service, enabling both lossless and classic Ethernet on the same fabric
Systemwide bandwidth management	Enables consistent and coherent quality-of-service (QoS) management throughout the system
Cisco VM-FEX technology	<ul style="list-style-type: none"> Enables a consistent operational model between virtual and physical environments Provides the same level of network visibility for virtualized and non-virtualized environments Improves diagnostic and troubleshooting capabilities in a virtual environment Simplifies network and security policy enforcement when migrating virtual machines from one host to another
SFP+ ports	<ul style="list-style-type: none"> Increases flexibility with a range of interconnect solutions, including copper Twinax cable for short runs and fiber for long runs Consumes less power per port than traditional solutions

Product Specifications

Cabling

Table 2 presents cabling specifications for the Cisco UCS 2100 Series.

Table 2. Cabling Specifications

Connector (Media)	Cable	Distance	Power (Each Side)	Transceiver Latency (Link)	Standard
SFP+ copper (CU)	Twinax	1, 3, 5, 7 and 10m	~0.1 watt (W)	~0.1 microsecond	SFF 8431
SFP+ short reach (SR) and multimode fiber (MMF)	MMF OM2 MMF OM3	82m 300m	1W	~0 microseconds	IEEE 802.3ae
SFP+ long reach (LR) and single mode fiber (SMF)	SMF	Up to 300m	1W	~0 microseconds	IEEE 802.3ae

Performance

- Hardware forwarding at 160 Gbps
- Low-latency cut-through design provides predictable, consistent traffic latency regardless of packet size, traffic pattern, or enabled features

Layer 2

- Layer 2 VLAN trunks
- IEEE 802.1Q VLAN encapsulation
- Support for up to 1024 VLANs and virtual SANs (VSANs)
- Support for Cisco VM-FEX architecture
- Jumbo frames on all ports (up to 9216 bytes)
- Pause frames (IEEE 802.3x)

QoS

- Layer 2 IEEE 802.1p (CoS)
- CoS-based egress queuing
- Egress strict-priority queuing
- Egress port-based scheduling: Weighted Round-Robin (WRR)
- Four hardware queues per port

High Availability

- Up to two fabric extenders can work in the Cisco UCS 5100 Series Blade Server Chassis
- Active-active data plane operation with failover
- Capability to fail over from one fabric extender to the other in the event of a failure
- Active-passive management plane operation
- Support for nonstop management plane functioning; if the active fabric extender fails, the passive fabric extender takes over the chassis management needs

Management

- Management of fabric extenders integrated into Cisco UCS Manager (please refer to the Cisco UCS Manager data sheet for more information about management interfaces)
- Capability to manage blade server chassis components such as power supplies, fans, and blades in conjunction with the fabric interconnect
- Firmware levels between the fabric extender and fabric interconnect always synchronized

Low-Latency, Lossless 10 Gigabit Ethernet Unified Network Fabric

- PFC (per-priority pause frame support)
- Data Center Bridging Exchange (DCBX) Protocol
- IEEE 802.1Qaz: Bandwidth management

Industry Standards

- IEEE 802.1p: CoS prioritization
- IEEE 802.1Q: VLAN tagging
- IEEE 802.3: Ethernet
- IEEE 802.3ad: LACP
- IEEE 802.3ae: 10 Gigabit Ethernet
- SFP+ support

Physical Specifications

SFP+ Optics

Cisco Unified Computing System products support 10 Gigabit Ethernet SFP+ copper Twinax cables for short distances and SFP+ optics for longer distances. SFP+ has several advantages compared to other 10 Gigabit Ethernet connectivity options, including:

- Small 10 Gigabit Ethernet form factor
- Optical interoperability with XENPAK, X2, and 10 Gigabit Small Form-Factor Pluggable (XFP) interface types
- Low power consumption
- Hot-swappable device

Environment

- Physical (height x width x depth): 7.64 x 1.36 x 7.2 in.
- Operating temperature: 32 to 104°F (0 to 40°C)
- Nonoperating temperature: -40 to 158°F -40 to 70°C)
- Humidity: 5 to 95% (noncondensing)
- Altitude: 0 to 10,000 ft (0 to 3000m)

Weight

- 2.5 lb (1.134 kg)

Regulatory Standards Compliance: Safety and EMC

Table 3 summarizes Cisco UCS 2100 Series regulatory compliance.

Table 3. Regulatory Standards Compliance: Safety and EMC

Specification	Description
Regulatory compliance	Products should comply with CE Markings according to directives 2004/108/EC and 2006/95/EC
Safety	<ul style="list-style-type: none">• UL 60950-1• CAN/CSA-C22.2 No. 60950-1• EN 60950-1• IEC 60950-1• AS/NZS 60950-1• GB4943

Specification	Description
EMC: Emissions	<ul style="list-style-type: none"> • 47CFR Part 15 (CFR 47) Class A • AS/NZS CISPR22 Class A • CISPR22 Class A • EN55022 Class A • ICES003 Class A • VCCI Class A • EN61000-3-2 • EN61000-3-3 • KN22 Class A • CNS13438 Class A
EMC: Immunity	<ul style="list-style-type: none"> • EN50082-1 • EN61000-6-1 • EN55024 • CISPR24 • EN300386 • KN 61000-4 series
RoHS	The product is RoHS 5-compliant with exceptions for leaded ball grid array (BGA) balls and lead press-fit connectors

Warranty Information

Find warranty information at Cisco.com on the [Product Warranties](#) page.

Cisco Unified Computing Services

Using a unified view of data center resources, Cisco and our industry-leading partners deliver services that accelerate your transition to a unified computing environment. Cisco Unified Computing Services help you quickly deploy your data center resources and optimize ongoing operations to better meet your business needs. For more information about these and other Cisco Data Center Services, visit <http://www.cisco.com/go/dcservices>.

For More Information

For more information about the Cisco UCS 2100 Series Fabric Extenders, visit <http://www.cisco.com/en/US/products/ps10278/index.html> or contact your local Cisco representative.



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