

Switch Fabric Module



Overview

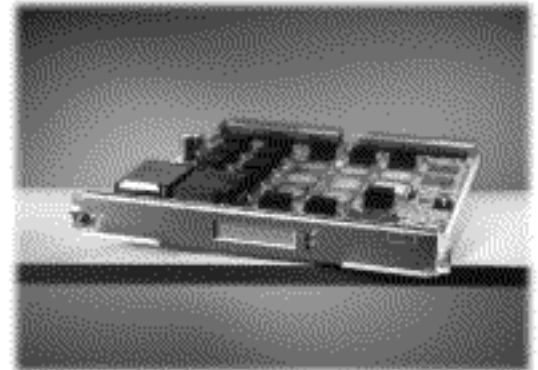
The Cisco Catalyst® 6500 Series switch fabric modules, including the new Switch Fabric Module 2 (WS-X6500-SFM2) and the Switch Fabric Module (WS-C6500-SFM), in combination with the Supervisor Engine 2, deliver an increase in available system bandwidth from the existing 32Gbps to 256 Gbps. This significant increase in available bandwidth ensures that the Cisco Catalyst 6500 Series continues to deliver not only best-in-class bandwidth, but also the performance and advanced services required for today's most advanced networks.

Both the Switch Fabric Module 2 and the Switch Fabric Module provide frameworks for delivering high-bandwidth architecture. These switch fabric modules are key enablers for the optional distributed forwarding architecture that facilitates convergence of high traffic volumes at different parts of the network. The Switch Fabric Module 2 and the Switch Fabric Module enable a new architecture that allows 30 Mpps of Cisco Express Forwarding (CEF)-based central forwarding performance on Supervisor Engine 2 and up to 210 Mpps of distributed forwarding performance. The higher bandwidth and performance enabled by the switch fabric modules, coupled with advanced services such as quality of service (QoS) and security in hardware via access control lists (ACLs), make the Cisco Catalyst 6500 Series the premier platform for service providers and enterprises (see Figure 1 and Figure 2.).

Figure 1 Switch Fabric Module2



Figure 2 Switch Fabric Module1



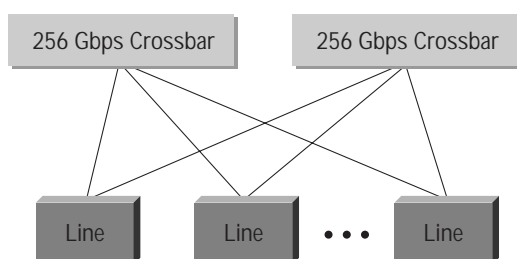


Key Features and Benefits

Computer networks have evolved into mission-critical resources that span a wide variety of industries and geographic distances. Networks are now a tool for supporting critical applications such as supply chain management, training, HR activities, and e-commerce. These usage trends have led to the evolution of networks to span greater distances-to interconnect functions within the same organization, partners, and customers. As distance requirements have grown, the Catalyst 6500 Series continues to increase its value by providing support for advanced network services and local-area network (LAN), metropolitan-area network (MAN), and wide-area network (WAN) interfaces in a variety of configurations.

As networks continue to provision higher bandwidth applications, the Catalyst 6500 Series maximizes scalability by enabling enhanced services without compromising performance. The switch fabric modules utilize a crossbar architecture to deliver 256-Gbps total capacity with a high-speed point-to-point connection to each line card. This provides a mechanism to forward packets between all point-to-point connections between the slots simultaneously. Many ports can thus be simultaneously transmitting and receiving data providing much higher aggregate throughput (see Figure 3).

Figure 3 Connection between Crossbar Fabrics and Linecards in a Redundant Configuration



The new Switch Fabric Module 2 (WS-X6500-SFM2) is supported in all Catalyst 6500 Series products, while the Switch Fabric Module (WS-C6500-SFM) is supported in the Catalyst 6506 and Catalyst 6509. The new Switch Fabric Module 2 can be used in slots 7 or 8 in the Catalyst 6513. The new Switch Fabric Module 2 and the Switch Fabric Module can be used in either slot 5 or 6 in the Catalyst 6506 and Catalyst 6509.

High Availability

Two switch fabric modules can be configured in a system for high availability. When installed in a redundant configuration, failover time between fabrics is a few seconds and the full system bandwidth of 256 Gbps remains available even following the failure of the active switch fabric module. This minimizes the impact of outages to preserve high availability of mission-critical applications in different network environments. In a single switch fabric module configuration with modules supporting both bus and fabric interfaces, the system can fail over to the 32-Gbps backplane bus if the switch fabric module fails, providing a highly available platform to host mission-critical applications.

Scalable Performance

When populated with a switch fabric module, a Supervisor Engine 2 with Multilayer Switch Feature Card (MSFC) 2, and fabric-enabled line cards, a Catalyst 6500 chassis can perform centralized Layer 2 and Layer 3 switching at 30 Mpps. When equipped with a Distributed Forwarding Card (DFC), each fabric-enabled card can perform localized switching and increases total system performance up to 210 Mpps. This allows the Catalyst 6500 Series to significantly scale performance while continuing to enable a host of advanced network services. This industry-leading performance, combined with the host of advanced network services and wide array of interfaces to support LAN/MAN/WAN connectivity, enables the Catalyst 6500 Series to deliver premier end-to-end solutions for large-scale enterprise and service provider applications. (Traffic Flow between Two Fabric-Enabled Cards)

Intelligent Services

Growing emphasis and reliance by enterprises upon high-bandwidth applications such as streaming data, audio and video has led to an increase in multicast traffic. As high-bandwidth access to homes becomes universal, there will also be an increasing demand for video streaming applications hosted by service providers. This makes it imperative that networking equipment for both service providers and enterprises incorporates features to forward multicast traffic at wire rate. The switch fabric modules incorporate built-in capabilities to handle multicast in an optimal fashion.



The switch fabric modules use highly efficient packet forwarding for unicast, broadcast, and multicast traffic. The switch fabric modules use a 3X overspeed architecture to handle multideestination traffic. This architecture, coupled with multicast replication performed in hardware on the Supervisor Engine and distributed switching line cards, allows service providers and enterprises to deploy high-bandwidth interactive and broadcast video applications without any performance penalty.

Flexible Migration Options

Investment Protection

The switch fabric modules offer full investment protection to existing customers by providing a migration path that allows a gradual transition to the new architecture. All existing line cards can be inserted in the same chassis as the switch fabric module, allowing customers to gain increased benefits of the new architecture while using existing cards. This compatibility enables customers to continue to use the diverse interface types offered in the current solution and begin to deploy the new fabric-enabled cards for performance enhancement through distributed forwarding and increased bandwidth.

Low Cost of Ownership

The switch fabric modules facilitate a scalable, high performance, and intelligent network architecture that allows line cards to be intermixed in Catalyst 6500 Series systems to provide maximum investment protection while reducing the total cost of ownership to the customer.

Ordering Information

Part Number	Description
WS-X6500-SFM2	Catalyst 6500 Switch Fabric Module 2
WS-X6500-SFM2=	Catalyst 6500 Switch Fabric Module 2, Spare
WS-C6500-SFM	Catalyst 6500 Switch Fabric Module
WS-C6500-SFM=	Catalyst 6500 Switch Fabric Module, Spare

Physical Specifications

- Dimensions: 1.75 x 15.4 x 16.8 in. (4.5 x 39.1 x 42.7 cm) (H x W x D)
- Weight: 10 lbs (4.54 Kg)

Environmental Conditions

- Operating Temperature: 32 to 104° F (0 to 40° C)
- Storage Temperature: -4 to 149° F (-20 to 65° C)
- Relative Humidity: 10 to 85%, noncondensing

Indicators

- Switch fabric module status: green (operational)/amber (alarms)/red (faulty)
- Active/standby LEDs to indicate the redundancy status of the fabric
- A 2-line by 20-character LCD displays status and performance information. Two push buttons (Select/Next) will be provided to allow for control and selection. Allows many display options such as Chassis serial number, Switch IP address, System Name, Supervisor Engine Version, MSFC version on active and standby Supervisor Engines, and System Contact.

Regulatory Compliance

Safety Certification

- UL 1950
- EN 60950
- CSA C22.2 No. 950
- IEC60950
- AS/NZS 3260

Electromagnetic Certification

- FCC (CFR 47) Part 15 Class A

- VCCI
- EN 55022
- EN 55024
- EN 300 386-2
- CISPR22
- AS/NZS 3548



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