

Cisco Catalyst 6500 Series 10 Gigabit Ethernet Interface Modules

Cisco's premier modular multilayer switch, the Catalyst® 6500 Series delivers secure, converged services from the wiring closet to the core, to the data center, to the WAN edge.

Widely deployed in high performance multigigabit and 10 Gigabit Ethernet based networks, the Catalyst 6500 supports an unparalleled range of interfaces and port densities.

As the leader in 10 Gigabit Ethernet deployments, the Catalyst 6500 delivers non-blocking 10 Gbps performance and high port density for data centers and network cores, that also incorporate several new innovations in forwarding and switch fabric architecture. These advances in the state of the art enable service providers and enterprises to offer new Layer 2 through 7 services and network capabilities to increase revenue and user productivity.

Catalyst 6500 10-Gigabit Ethernet modules provide a broad selection of features, including:

- **Enable new bandwidth-intensive applications**—Enable new applications, including storage networking, e-learning, imaging and 3D modeling, and grid computing with intensive bandwidth requirements
- **Smooth migration path from Gigabit EtherChannel**—High port density, up to 32 ports per system, encourages Gigabit EtherChannel deployments to migrate to 10 Gigabit Ethernet
- **Flexible configurations for any deployment**—Provide flexible port density, media/optics, and performance for deployment in enterprise and service provider networks
- **Enable Cisco Catalyst 6500 end-to-end solutions**—Suitable for aggregating inter-building, distribution and core, data center points of presence (POPs), WAN edge, and MAN traffic
- **Scalable and predictable performance**—With three classes of interface modules:
 - CEF256—30Mpps (sustained)
 - aCEF720—400Mpps (peak)
 - dCEF720—400Mpps (sustained)
- **Superior traffic management**—Available with large per-port buffers (up to 256 MB) and up to 16 multiple-priority transmit queues per VLAN for traffic prioritization and policing
- **Choice of media and optics**—Available in 802.3ae standard interfaces:
 - 10GBASE-LR Serial 1310 nm Long Haul interface (up to 10 km over single-mode fiber) and 10GBASE-ER Serial 1550 nm Extended Reach interface (up to 40 km over single-mode fiber); available with one-port optical interface module (OIM) and two-port XENPAK



- **Operational consistency**—Supported in all Catalyst 6500 3-, 6-, 9- and 13-slot chassis running Cisco IOS® Software and Cisco Catalyst Operating System Software; interoperable with all other interfaces and services modules; and forward-compatible with all Catalyst 6500 supervisor engines
- **Maximum network uptime and resiliency**—Support Cisco enhanced Per-Virtual LAN (VLAN) Spanning Tree Plus (PVST+) protocol, IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) and IEEE 802.1s Multiple Spanning Tree (MST) protocol, Per-VLAN Rapid Spanning Tree (PVRST) protocol, Hot Standby Router Protocol (HSRP), Virtual Router Redundancy Protocol (VRRP), Cisco EtherChannel®, and IEEE 802.3ad link aggregation for fault-tolerant connectivity
- **Extensive management tools**—Support CiscoWorks network management platform, Simple Network Management Protocol (SNMP) versions 1, 2, and 3, and four Remote Monitoring (RMON) groups (statistics, history, alarms, and events) as well as integrated multigigabit Network Analysis Modules

Figure 1

Cisco Catalyst 6500 Series dCEF720 10 Gigabit Ethernet Optical Module
WS-X-6802-10GE



10 Gigabit Ethernet Applications

10 Gigabit Ethernet interface modules are used in core-layer, distribution-layer, and core-to-distribution layer-connectivity applications.

10 Gigabit Ethernet Interface Module Classes

Providing wire-speed switched connectivity for extended-reach and long-reach fiber, 10 Gigabit Ethernet interface module classes include Cisco Catalyst CEF256, aCEF720, and dCEF720. Cisco Catalyst CEF256 interface modules communicate with the Supervisor Engine 1A, Supervisor Engine 2, and Supervisor Engine 720. Cisco Catalyst aCEF720 and dCEF720 interface modules communicate only with the Supervisor Engine 720.

Cisco Catalyst CEF256 Interface Modules

Suited for distribution and core layers and for data-center and Web-hosting applications, Cisco Catalyst CEF256 interface modules use the centralized CEF engine located on the supervisor engine's policy feature card (PFC) and forward packets up to 30 Mpps. For more information see the *Cisco Catalyst 6500 Switch Data Sheet* section titled: **How Cisco Express Forwarding Works.**



Cisco Catalyst aCEF720 Interface Modules

Designed for distribution to core interconnect and datacenter interconnections in Enterprise networks, the aCEF720 10 Gigabit Ethernet interface modules provide high-performance 10GbE forwarding with local acceleration. The 4-port WS-X6704-10GE provides high port -density at an attractive price, encouraging Gigabit Etherchannel deployments to migrate to 10 Gigabit Ethernet . For more information see the *Cisco Catalyst 6500 Switch Data Sheet* section titled: How Accelerated Cisco Express Forwarding Works.

Cisco Catalyst dCEF720 Interface Modules

Suited for long-haul transmission in distribution and core layers and for data-center and Web-hosting applications, Cisco Catalyst dCEF720 interface modules require a Supervisor 720 and use the dCEF engine and dCEF tables located on the interface module to perform all forwarding. dCEF720 interface modules are equipped with large buffers. For more information see the *Cisco Catalyst 6500 Switch Data Sheet* section titled: How Distributed Cisco Express Forwarding Works.

Table 1 Comparison of 10 Gigabit Ethernet Interface Module Classes

Feature	CEF256	aCEF720	dCEF720
Primary Application	Core and data center	High peak performance enterprise cores and data centers, including Metro Ethernet networks	High sustained performance service provider and enterprise cores and data centers, including Metro Ethernet networks
Module performance maximum (Mpps)	Performance up to 30 Mpps per system; (15 Mpps per slot for interface modules upgraded with DFCs to support distributed forwarding) <i>Note:</i> 30 Mpps correspond to 20 Gbps with 64-byte packets	Peak performance up to 400 Mpps per system; 48 Mpps per slot (based on 4-port density)	Sustained performance up to 400 Mpps per system; 30 Mpps per slot (based on 2-port density, nonblocking)
Forwarding engine/ location (default)	Centralized CEF engine located on PFCx (Supervisor Engine 2 and Supervisor 720)	Accelerated CEF engine; integrated on interface module	Distributed CEF engine; integrated on interface module
Maxium Port Density/Chassis	12 ports (13-slot) 8 ports (9-slot)	20 ports (13-slot) 32 ports (9-slot)	10 ports (13-slot) 16 ports (9-slot)
Ports/Interface/ Connector/ Transceiver	1 port 10GBASE-ER or 10GBASE-LR SC (female) Optical Interface Modules (OIMs) long reach and extended reach	4 ports 10GBASE-ER or 10GBASE-LR SC (female) XENPAKs: WS-XENPAK-LR WS-XENPAK-ER	2 ports 10GBASE-ER or 10GBASE-LR SC (female) XENPAKs: WS-XENPAK-LR WS-XENPAK-ER



Table 1 Comparison of 10 Gigabit Ethernet Interface Module Classes

Feature	CEF256	aCEF720	dCEF720
Supervisor engines supported	Supervisor Engine 1A; Supervisor Engine 2; Supervisor Engine 720	Supervisor Engine 720	Supervisor Engine 720
DFC modules integrated and upgrade requirements	None integrated; upgrade with WS-F6K-DFC3 for Supervisor Engine 720 or upgrade with WS-F6K-DFC for Supervisor Engine 2-MSFC2	None integrated; upgrade with WS-F6700-DFC3 for Supervisor Engine 720	DFC3 integrated
Fabric connections	Single 8-Gbps channel connection to switch fabric [on Supervisor Engine 720 or Supervisor Engine 2-MSFC2 with Switch Fabric Module (SFM)] and 32-Gbps shared bus connection	Dual 20-Gbps serial channel connections to switch fabric (on Supervisor Engine 720)	Dual 20-Gbps serial channel connections to switch fabric (on Supervisor Engine 720)
Slot requirements	Can occupy any slot in any chassis	Can occupy any slot in any Cisco Catalyst 6503, 6506, 6509, 6509 NEB, or 6509-NEB-A chassis, or any Cisco 7603, 7606, 7609, or OSR-7609, chassis; Can only occupy slots 9 through 13 in a Cisco Catalyst 6513 or 7613 chassis	Can occupy any slot in any Cisco Catalyst 6503, 6506, 6509, 6509 NEB, or 6509-NEB-A chassis, or any Cisco 7603, 7606, 7609, or OSR-7609 chassis; Can only occupy slots 9 through 13 in a Cisco Catalyst 6513 or 7613 chassis
QoS queue selection criteria	Class of service (CoS)-queue	CoS-queue	CoS-queue; Differentiated Services Code Point (DSCP)-queue; VLAN-queue
Scheduler	Weighted Round Robin (WRR)	Deficit WRR	Deficit WRR and Shaped Round Robin
Transmit queue structure	1p2q1t	1p7q8t	1p7q8t
Receive queue structure	1p1q8t	8q8t	8q8t
Buffer size	64 MB	16 MB	256 MB

Legend: 1p7q8t = one strict priority queue, seven WRR queues, and eight thresholds per WRR queue



Cisco Catalyst CEF256 10 Gigabit Ethernet Interface Modules

Suited for distribution and core layers and for data-center and Web-hosting applications, Cisco Catalyst CEF256 10 Gigabit Ethernet interface modules provide the following operational advantages:

Forwarding architecture—Uses the central CEF engine located on the supervisor engine

Forwarding performance—Forwards packets up to 30 Mpps per system or up to 15 Mpps per slot if upgraded to distributed forwarding

Optics—Supports a single IEEE 802.3ae-compliant 10GBASE-LR long reach or 10GBASE-ER extended reach OIM over single-mode fiber

Fabric connection—Connects to the switch fabric through one 8-Gbps connection and the 32-Gbps shared bus

Supervisor engine—Operates in the same chassis with the Supervisor Engine 1A, Supervisor Engine 2, and Supervisor Engine 720

Distributed forwarding upgrade—Required only to perform distributed forwarding; requires a WS-F6K-DFC3 upgrade to perform distributed forwarding with Supervisor Engine 720; requires a WS-F6K-DFC upgrade and an SFM to perform distributed forwarding with Supervisor Engine 2-MFSC2

Slot requirements—Can occupy any slot in any Cisco Catalyst 6500 Series chassis

Note: The Supervisor Engine 720 communicates with a CEF256 interface module in 256-Gbps mode. A Supervisor Engine 720 and SFM cannot operate in the same chassis.

Table 2 CEF256 10 Gigabit Ethernet Optical Interface Modules

Product	Transceiver Type	Ports/Interface/ Connector	Port Density/ Chassis Model	Maximum Distance/ Cable Type
WS-X6502-10GE	OIM; WS-G6488 – 10GBASE-LR; WS-G6483 – 10GBASE-ER	1 port; 10GBASE-LR or 10GBASE-ER SC (female)	12 ports (Cisco Catalyst 6513); 8 ports (Cisco Catalyst 6509)	10 km over single-mode fiber—10GBASE-LR Serial 1310 nm long haul interface; 40 km over single-mode fiber—10GBASE-ER Serial 1550 nm extended reach interface

Figure 2
With WS-G6488—10GBASE-LR Serial 1310-nm OIM





Cisco Catalyst aCEF720 10 Gigabit Ethernet Interface Modules

Designed for distribution to core interconnect and datacenter interconnections in Enterprise networks, the aCEF720 10 Gigabit Ethernet interface modules provide high-performance 10GbE forwarding with local acceleration along with the following operational advantages:

Forwarding architecture—Uses the aCEF engine and aCEF tables located on the interface module

Forwarding performance—Forwards packets at wire rate, up to 400 Mpps per system and 48 Mpps per slot when interface modules have dual-fabric connections

Optics—Supports hot-pluggable 10GBASE-LR long reach or 10GBASE-ER extended reach XENPAK optical modules

Fabric connection—Connects through dual 20-Gbps serial-channel connections to fabric on Supervisor Engine 720 (40 Gbps total per slot)

Supervisor engine—Operates only with Supervisor Engine 720

Distributed forwarding upgrade—Required only to perform distributed forwarding on the DFC3 forwarding engine; requires a WS-F6700-DFC3 upgrade

Slot requirements—Can occupy any slot in any Cisco Catalyst 6500 Series chassis except the Cisco Catalyst 6513 chassis where they must be installed in slots 9 through 13 (the only slots on the chassis with dual fabric connections)

Table 3 dCEF720 10 Gigabit Ethernet Optical Interface Modules

Product	Transceiver Type	Ports/Interface/Connector	Port Density/Chassis Model	Maximum Distance/Cable Type
WS-X6704-10GE	XENPAKs: WS-XENPAK-LR; WS-XENPAK-ER	4 ports; 10GBASE-ER or 10GBASE-LR SC (female)	20 ports (Cisco Catalyst 6513); 32 ports (Cisco Catalyst 6509); 20 ports (Cisco Catalyst 6506); 8 ports (Cisco Catalyst 6503)	10 km over single-mode fiber—10GBASE-LR Serial 1310 nm long haul interface; 40 km over single-mode fiber— 10GBASE-ER Serial 1550 nm extended reach interface



Cisco Catalyst dCEF720 10 Gigabit Ethernet Interface Modules

Suited for high-performance distribution and core layers and for data-center, Web-hosting, and storage networking applications requiring aggregation into 10 Gigabit Ethernet cores and WAN edge and distributed grid supercomputing applications, Cisco Catalyst dCEF720 10 Gigabit Ethernet interface modules provide line-rate 10 Gigabit Ethernet forwarding with the following operational advantages:

Forwarding architecture—Uses the dCEF engine and dCEF tables located on the interface module

Forwarding performance—Forwards packets at wire rate, up to 400 Mpps per system and 30 Mpps per slot when interface modules have dual-fabric connections

Optics—Supports hot-pluggable 10GBASE-LR long reach or 10GBASE-ER extended reach XENPAK optical modules

Fabric connection—Connects through dual 20-Gbps serial-channel connections to fabric on Supervisor Engine 720 (40 Gbps total per slot)

Supervisor engine—Operates only with Supervisor Engine 720

Distributed forwarding—The interface module includes a DFC3 for distributed bridging, routing, access control lists (ACLs), QoS, and NetFlow; no upgrade is required

Slot requirements—Can occupy any slot in any Cisco Catalyst 6500 Series chassis except the Cisco Catalyst 6513 chassis where they must be installed in slots 9 through 13 (the only slots on the chassis with dual fabric connections)

Table 4 dCEF720 10 Gigabit Ethernet Optical Interface Modules

Product	Transceiver Type	Ports/Interface/Connector	Port Density/Chassis Model	Maximum Distance/Cable Type
WS-X6802-10GE	XENPAKs: WS-XENPAK-LR; WS-XENPAK-ER	2 ports; 10GBASE-ER or 10GBASE-LR SC (female)	10 ports (Cisco Catalyst 6513); 16 ports (Cisco Catalyst 6509); 10 ports (Cisco Catalyst 6506); 4 ports (Cisco Catalyst 6503)	10 km over single-mode fiber—10GBASE-LR Serial 1310 nm long haul interface; 40 km over single-mode fiber—10GBASE-ER Serial 1550 nm extended reach interface

Figure 3
dCEF720 10 Gigabit Ethernet Optical Module
WS-X6802-10GE





10 Gigabit Ethernet Optics

10 Gigabit Ethernet modules provide IEEE 802.3ae standards-based 10 Gigabit Ethernet with two optic packages: XENPAK and OIM.

XENPAK Modules for dCEF720 10 Gigabit Interface Modules

Two types of XENPAK modules, available for the WS-X6802-10GE, support the extended reach and long reach interfaces. Each XENPAK supports a single 10 Gigabit Ethernet interface, and different types of XENPAK modules can be used in the same interface module:

- **WS-XENPAK-LR: 10GBASE-LR Serial 1310 nm 10 Gigabit Ethernet XENPAK**
(up to 10 km over single-mode fiber)
- **WS-XENPAK-ER: 10GBASE-ER Serial 1550 nm 10 Gigabit Ethernet XENPAK**
(up to 40 km over single-mode fiber)

Note: XENPAK modules support the optics type specified in the IEEE 802.3ae standard.

Optical Interface Modules for CEF256 Series 10 Gigabit Interface Modules

Two types of OIM, available for the WS-X6502-10GE, support the extended reach and long reach interfaces. Each OIM supports a single 10 Gigabit Ethernet interface:

- **WS-G6488: 10GBASE-LR Serial 1310 nm Long Reach 10 Gigabit Ethernet Optical Interface Module**
(up to 10 km over single-mode fiber)
- **WS-G6483: 10GBASE-ER Serial 1550 nm Extended Reach 10 Gigabit Ethernet Optical Interface Module**
(up to 40 km over single-mode fiber)

Table 5 10 Gigabit Ethernet Optics

Product ID/Interface Module Series	Optic Type	Optics	Connector	9/10 um Single-Mode Fiber	Dispersion-Shifted Fiber ¹
WS-XENPAK-LR (WS-X6802-10GE, WS-X6704-10GE)	XENPAK	10GBASE-LR 1310 nm Serial	SC	2 m–10 km ²	2 m–10 km ²
WS-XENPAK-ER (WS-X6802-10GE, WS-X6704-10GE)	XENPAK	10GBASE-ER 1550 nm Serial	SC	2 m–40 km ³	2 m–40 km ³
WS-G6488 (WS-X6502-10GE)	OIM	10GBASE-LR 1310 nm Serial	SC	2 m–10 km ²	2 m–10 km ²
WS-G6483 (WS-X6502-10GE)	OIM	10GBASE-ER 1550 nm Serial	SC	2 m–40 km ³	2 m–40 km ³

1. Even though dispersion-shifted fiber helps in reducing signal dispersion to go longer distances, the signal attenuation still limits its distance.

2. According to the IEEE 802.3ae standard.

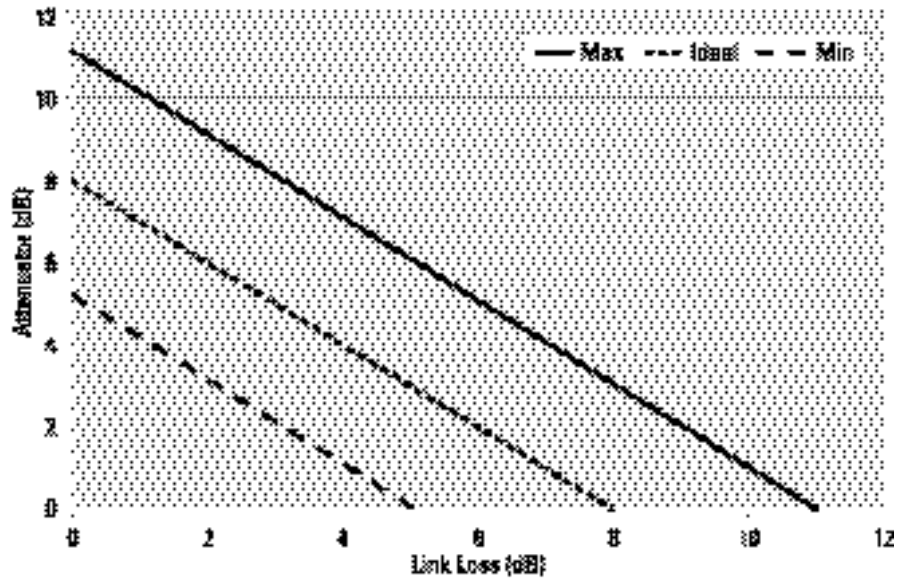
3. According to the IEEE 802.3ae standard. Requires 5 dB 1550 nm fixed loss attenuator for < 20 km. 5 dB fixed loss attenuator is included in the WS-G6483 order. It is also available as a spare, part number WS-X6K-5DB-ATT=. To calculate the exact distances that your module will support before installation, see Table 5 and Figure 4. The exact distance supported varies according to the number of splices and connectors in a single-mode fiber strand.



Table 6 10 Gigabit dCEF720 XENPAK Ethernet Optics Specifications

Product ID	Link Power Budget	Wavelength	Average Transmitter Output Power	Average Receiver Input Power
WS-XENPAK-LR or WS-G6488 ¹	6.2 dB	1260 to 1355 nm	Min: -8.2 dBm Max: 0.5 dBm	Min: -14.4 dBm Max: 0.5 dBm
WS-XENPAK-ER or WS-G6483 ¹	11.1 dB	1530 to 1565 nm	Min: -4.7 dBm Max: 4 dBm	Min: -15.8 dBm Max: -1 dBm

Figure 4
10GBASE-ER Attenuator Management



Note: According to the IEEE 802.3ae standard, the 10GBASE-E channel shall have an attenuation between 5 and 11 dB. If required, an attenuator can be added to comply with this specification. The ideal channel attenuation is 8 dB.



Ordering Information

Table 6 lists the ordering information for 10 Gigabit Ethernet interface modules.

Table 7 Product Numbers for Ordering

Part Number	Description
WS-X6802-10GE	Cisco Catalyst 6500 dCEF720 2-port 10 Gigabit Ethernet Module, requires XENPAK
WS-X6704-10GE	Cisco Catalyst 6500 dCEF720 4-port 10 Gigabit Ethernet Module, requires XENPAK
WS-F6700-DFC3	Distributed forwarding daughter card (DFC3) for aCEF720 interface modules
WS-XENPAK-LR	1-port 10GBASE-LR Serial 1310 nm 10 Gigabit Ethernet XENPAK (single-mode fiber)
WS-XENPAK-ER	1-port 10GBASE-ER Serial 1550 nm 10 Gigabit Ethernet XENPAK (single-mode fiber)
WS-X6502-10GE	Cisco Catalyst 6500 CEF256 1-port 10 Gigabit Ethernet Base Module, requires OIM
WS-F6K-DFC3	Distributed forwarding daughter card (DFC) for CEF256 interface modules
WS-G6488	1-port 10GBASE-LR Serial 1310 nm Long Reach OIM (single-mode fiber)
WS-G6483	1-port 10GBASE-ER Serial 1550 nm Extended Reach OIM (single-mode fiber)

Specifications

Standard Protocols

- IEEE 802.1d, IEEE 802.1p, IEEE 802.1q, IEEE 802.1s, IEEE 802.1w, IEEE 802.3x, IEEE 802.3ad, and IEEE 802.3ae
- IEEE 802.3ae

Physical Specifications

WS-X6802-10GE or WS-X6502-10GE:

- Occupies one slot in the Cisco Catalyst 6500
- Dimensions (H x W x D): 1.2 x 14.4 x 16 in. (3.0 x 35.6 x 40.6 cm)

Environmental Conditions

- Operating temperature: 32° to 104°F (0° to 40°C)
- Storage temperature: -40° to 167°F (-40° to 75°C)
- Relative humidity: 10 to 90%, noncondensing
- Operating altitude: -60 to 4000 m

Regulatory Compliance

Cisco Catalyst 6500 Series 10 Gigabit Ethernet modules, when installed in a system, comply with the following EMI and safety standards:

- UL 1950
- CSA C22.2 No. 950



- EN 60950
- EN 60825-1
- IEC 60950
- IEC 60825-1
- TS 001
- CE marking
- AS/NZS 3260
- 21CFR1040
- FCC Part 15 (CFR 47) Class A
- VCCI Class A
- EN55022 Class A
- EN55024
- CISPR 22 Class A
- AS/NZS 3548
- ETS 300 386

Network Management

- EHERLIKE-MIB (RFC 1643)
- IF-MIB (RFC 1573)
- Bridge MIB (RFC 1493)
- CISCO-STACK-MIB
- CISCO-VTP-MIB
- CISCO-CDP-MIB
- RMON MIB (RFC 1757)
- CISCO-PAGP-MIB
- CISCO-STP-EXTENSIONS-MIB
- CISCO-VLAN-BRIDGE-MIB
- CISCO-VLAN-MEMBERSHIP-MIB
- ENTITY-MIB (RFC 2037)
- HC-RMON
- RFC1213-MIB (MIB-II)
- SMON-MIB

Station-to-Station Cabling Distance

- 10GBASE-LR: single-mode fiber: up to 10 km
- 10GBASE-ER: single-mode fiber: up to 40 km



Power Requirements

- WS-X6502-10GE with WS-G6488: 138.6W
(3.30A @ 42V)
- WS-X6502-10GE with WS-G6483: 138.6W
(3.30A @ 42V)

Indicators and Interfaces

- Status—green (operational); red (faulty); orange (module booting)
- Link—green (port enabled and connected); orange (port disabled); off (port enabled and not connected)
- 10GBASE-LR or 10GBASE-ER—duplex SC (female, single mode)

WS-X6K-5DB-ATT= Specifications

- Operational wavelength: 1550 nm \pm 25 nm
- Attenuation: 5 dB \pm 1 dB
- Return loss: \leq 50 dB (53 dB typical)
- Connector: SC
- Dimensions: (H x W x D): 9.0 x 12.8 x 37.0 mm
- Operating temperature: -20° to 70° C
- Storage temperature: -40° to 80° C

Technical Support Services

Whether your company is a large organization, a commercial business, or a service provider, Cisco is committed to maximizing the return on your network investment. Cisco offers a portfolio of technical support services to help ensure that your Cisco products operate efficiently, remain highly available, and benefit from the most up-to-date system software.

The Cisco Technical Support Services organization offers the following features, providing network investment protection and minimal downtime for systems running mission-critical applications:

- Provides Cisco networking expertise online and on the telephone
- Creates a proactive support environment with software updates and upgrades as an ongoing integral part of your network operations, not merely a remedy when a failure or problem occurs
- Makes Cisco technical knowledge and resources available to you on demand
- Augments the resources of your technical staff to increase productivity
- Complements remote technical support with onsite hardware replacement

Cisco Technical Support Services include:

- Cisco SMARTnet™ support
- Cisco SMARTnet Onsite support
- Cisco Software Application Services, including Software Application Support and Software Application Support plus Upgrades

For more information, visit:

http://www.cisco.com/en/US/products/svcs/ps3034/serv_category_home.html

Additional Cisco Catalyst 6500 Series Information

Visit this link for to view the following data sheets:

http://www.cisco.com/en/US/products/hw/switches/ps708/products_data_sheets_list.html:

- Cisco Catalyst 6500 Series Data Sheet
- Cisco Catalyst 6500 Series Supervisor Engine 1A and Supervisor 2 Data Sheet
- Cisco Catalyst 6500 Series Supervisor Engine 720 Data Sheet
- Cisco Catalyst 6500 Series 10/100 and 10/100/1000 Ethernet Data Sheet
- Cisco Catalyst 6500 Series Gigabit Ethernet Interface Modules Data Sheet
- Cisco Catalyst 6500 Series FlexWAN Interface Modules Data Sheet
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Corporate Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters

Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: 31 0 20 357 1000
Fax: 31 0 20 357 1100

Americas Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-7660
Fax: 408 527-0883

Asia Pacific Headquarters

Cisco Systems, Inc.
Capital Tower
168 Robinson Road
#22-01 to #29-01
Singapore 068912
www.cisco.com
Tel: +65 6317 7777
Fax: +65 6317 7799

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