

# Cisco Industrial Ethernet 2000 Series Switches

## Product Overview

The Cisco® Industrial Ethernet 2000 (IE 2000) Series is a range of compact, ruggedized access switches that handle security, voice, and video traffic across industrial networks. They provide customers in industries such as automotive, oil and gas, mining, transportation, and energy with highly secure access and industry-leading convergence using Cisco Resilient Ethernet Protocol (REP).

## Product Details

The Cisco IE 2000 Series are designed for low cost, low ports, and small sizes. They offer:

- Four, eight, or 16 10/100Base-T Ethernet ports (Small Form-Factor Pluggable [SFP] downlinks on selected models); fixed configurations with a compact form factor
- Two gigabit combo ports: SFP (100 Mbps and 1 Gbps) or RJ45 uplink
- Dual-input DC power supply, alarm relays, DIN rail mount
- Industrial Power over Ethernet (PoE) solution
- Conformal coating available
- Swappable SD flash card and mini-USB connector
- Industrial environmental compliance and certifications
- Industrial partner applications: Ethernet/IP and PROFINET

## Primary Benefits and Features

- **Easy deployment:** Zero-touch discovery using Dynamic Host Control Protocol (DHCP), express setup, and fast bootup time (60 seconds) to help in migrating to an Ethernet environment without resistance.
- **Security:** 802.1x, port security, and DHCP allow dynamic port-based authentication; Secure Shell (SSHv2); SNMPv3 provides encrypted administrator traffic during Telnet and SNMP sessions; TACACS+ and RADIUS authentication facilitate centralized control and restrict unauthorized users.
- **Resiliency:** Cisco REP ring protocol and PROFINET– Media Redundancy Protocol (MRP).
- **Manageability:** Auto SmartPort, Web Device Manager, Telnet, HTTPS access, SNMP, CNA, and Cisco Prime Infrastructure.
- **Network Address Translation (NAT):** Line-rate, hardware-enabled 1:1 static address translation designed to enable duplicate IP address usage in the Layer 2 machine node networks.
- **Layer 3 routing:** IPv4 and IPv6.
- **Industrial PoE:** PoE (IEEE 802.af) and PoE+ (802.3at) supported on selected models.
- **Industrial automation protocols:** EtherNet/IP (CIP) and PROFINET MRP (IEC 62439-2) allow integration with existing management platforms from Rockwell, Siemens, and others.

## Product Specifications

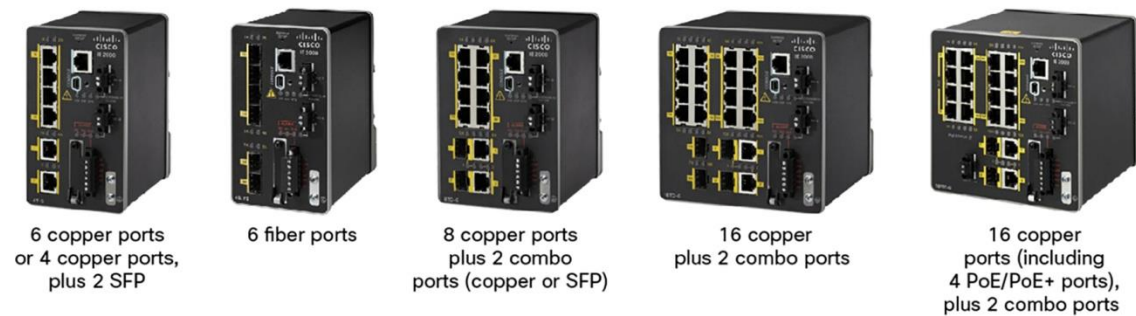
### Switch Performance and Scalability

- Maximum Forwarding Bandwidth 3.8Gbps
- Maximum Switching Bandwidth 7.6Gbps
- Maximum Forwarding rate: 5.66Mbps with 64-byte packets (Line-rate at all packet sizes)
- Egress buffer: 2 MB
- Unicast MAC addresses: 8000
- Internet Group Management Protocol (IGMP) multicast groups: 255
- Maximum virtual LANs (VLANs): 1005
- IPv4 MAC security ACEs: 384 (default ternary content-addressable memory [TCAM] template)
- Bidirectional, 128 NAT translation entries
- IPv4 routing: 3500 routes, IPv6 routing: 1750 routes

### Detailed Product Information

Figure 1 shows switch models, and Table 1 shows the Cisco IE 2000 Series configuration information. Table 2 lists the SKUs for power supplies and license upgrades. Table 3 includes IE 2000 Series product specifications. Table 4 lists software features. Table 5 includes compliance specifications. Table 6 outlines management and relevant industry standards.

**Figure 1.** Industrial Ethernet 2000 Series



**Table 1.** Industrial Ethernet 2000 Series Configurations

Product Number	Total Ports	RJ45 Ports	Combo Ports	SFP Ports	Manufacturing License	Type of possible Upgrade	IEEE 1588	NAT	PoE(+)	Conformal Coating
IE-2000-4TS-L <sup>1</sup>	6	4 FE		2 FE	LAN Lite	3				
IE-2000-4TS-B	6	4 FE		2 FE	LAN Base	1				
IE-2000-4T-L	6	6 FE			LAN Lite	3				
IE-2000-4T-B	6	6 FE			LAN Base	1				
IE-2000-4TS-G-L	6	4 FE		2 GE	LAN Lite	3				
IE-2000-4TS-G-B	6	4 FE		2 GE	LAN Base	1				
IE-2000-4T-G-L	6	4 FE, 2 GE			LAN Lite	3				
IE-2000-4T-G-B	6	4 FE, 2 GE			LAN Base	1				
IE-2000-4S-TS-G-L	6			4 FE, 2 GE	LAN Lite	3				
IE-2000-4S-TS-G-B	6			4 FE, 2 GE	LAN Base	1, 3				

Product Number	Total Ports	RJ45 Ports	Combo Ports	SFP Ports	Manufacturing License	Type of possible Upgrade	IEEE 1588	NAT	PoE(+)	Conformal Coating
IE-2000-8TC-L	10	8 FE	2 FE		LAN Lite	3				
IE-2000-8TC-B	10	8 FE	2 FE		LAN Base	1				
IE-2000-8TC-G-L	10	8 FE	2 GE		LAN Lite	3				
IE-2000-8TC-G-B	10	8 FE	2 GE		LAN Base	1,				
IE-2000-8TC-G-E	10	8 FE	2 GE		LAN Base	1, 2, 4	X	X		
IE-2000-16TC-L	20	16 FE	2 FE	2 FE	LAN Lite	3				
IE-2000-16TC-B	20	16 FE	2 FE	2 FE	LAN Base	1				
IE-2000-16TC-G-L	20	16 FE	2 GE	2 FE	LAN Lite	3				
IE-2000-16TC-G-E	20	16 FE	2 GE	2 FE	LAN Base	1, 2, 4	X	X		
IE-2000-16TC-G-X	20	16 FE	2 GE	2 FE	LAN Base	1, 2, 4	X	X		X
IE-2000-8TC-G-N	10	8 FE	2 GE		Enhanced LAN Base	1, 2	X	X		
IE-2000-16TC-G-N	20	16 FE	2 GE	2FE	Enhanced LAN Base	1, 2	X	X		
IE-2000-16PTC-G-L	18	16 FE	2 GE		LAN Lite	3			X	
IE-2000-16PTC-G-E	18	16 FE	2 GE		LAN Base	1, 2	X	X <sup>2</sup>	X	
IE-2000-16PTC-G-NX	18	16 FE	2 GE		Enhanced LAN Base	1, 2	X	X	X	X

"Type of possible Upgrade" Legend:

1: LAN Base to IP Lite Cisco IOS Software Upgrade

2: Enhanced LAN Base to IP Lite Cisco IOS Software Upgrade 3: LAN Lite to LAN Base Cisco IOS Software Upgrade

4: LAN Base to Enhanced LAN Base Cisco IOS Software Upgrade and License Upgrade

**Table 2.** Accessories and License Upgrade PIDs

Product Number	Description
SD-IE-1GB=	1 GB Ruggedized SD memory card (must be ordered, not included by default)
STK-RACKMNT-2955=	19 in. DIN Rail mount kit
STK-RACK-DINRAIL=	19" DIN Rail mount kit
L-IE2000-L-B=	IE2000 LAN Lite to LAN Base e-license
IE2000-L-B=	IE2000 LAN Lite to LAN Base paper license
L-IE2000-B-E=	IE2000 LAN Base to Enhanced LAN Base e-license
IE2000-B-E=	IE2000 LAN Base to Enhanced LAN Base paper license
LIC-IE2000-IP-L=	IE2000 LAN Base or Enhanced LAN Base to IPLite e-license
LIC-MRP-MANAGER=	MRP Ring Manager license
LIC-MRP-Client=	MRP Ring Client license
LIC-MRP-Multi-MGR=	Multiple MRP Manager License
Wallmount-IE2k-04	Wall mount kit accessory for IE2000 4-ports downlink PID
Wallmount-IE2k-08	Wall mount kit accessory for IE2000 8-ports downlink PID
Wallmount-IE2k-16	Wall mount kit accessory for IE2000 16-ports downlink PID

**Table 3.** Product Specifications

Description	Specification
<b>Hardware</b>	<ul style="list-style-type: none"> <li>• 256 MB DRAM with ECC memory</li> <li>• IEEE 1588v2 FPGA</li> <li>• 64 MB on-board flash memory</li> <li>• 1GB removable SD flash memory card (optional)</li> <li>• Mini-USB connector</li> </ul>
<b>Alarm</b>	<ul style="list-style-type: none"> <li>• Alarm I/O: Two alarm inputs to detect dry contact open or close; one alarm output relay</li> </ul>
<b>Power Consumption</b>	<ul style="list-style-type: none"> <li>• 4-port downlink models: 9.5-15 W</li> <li>• 8-port downlink models: 12.5-20 W</li> <li>• 16-port downlink models: 21-30 W</li> <li>• 4-port PoE/PoE+ models: 21-30 W (16-port base switch) and 4 PoE/PoE+ power requirement</li> </ul>
<b>Connectors and Cabling</b>	<ul style="list-style-type: none"> <li>• 100BASE-FX MMF (2 km), -LX SMF (10 km) -ZX SMF (100 km), BX10 SMF (10 km) SFP and CWDM SFP- based ports: LC fiber connectors</li> <li>• 10/100/1000BASE-T ports: RJ-45 connectors, 4-pair Category 5 UTP cabling</li> </ul>
<b>Dimensions (H x W x D) Including DIN Rail</b>	<ul style="list-style-type: none"> <li>• IE-2000 6 ports (copper downlinks) chassis: 5.1"H x 2.95"W x 4.51"D in (130mm H x 74.9mm W x 115mm D)</li> <li>• IE-2000 6 ports (SFP downlinks) chassis: 5.1"H x 3.15"W x 4.51"D in (130mm H x 80mm W x 115mm D)</li> <li>• IE-2000 10 ports short chassis: 5.1"H x 3.6"W x 4.51"D (130mm H x 91.4mm W x 115mm D)</li> <li>• IE-2000 10 ports long chassis: 5.1"H x 3.6"W x 5.26"D (130mm H x 91.4mm W x 134mm D)</li> <li>• IE-2000 18-20 ports chassis: 5.1"H x 5.0"W x 5.26"D (130mm H x 127mm W x 134mm D)</li> <li>• PWR-IE50W-AC=: 5.8"H x 2.0"W x 4.4"D (147mm H x 51 mm W x 112mm D)</li> <li>• PWR-65W-PC-AC=: 5.9 "H x 2.6"W x 4.6"D (150mm H x 66mm W x 117mm D)</li> <li>• PWR-65W-PC-DC=: 5.9 "H x 2.6"W x 4.6"D (150mm H x 66mm W x 117mm D)</li> <li>• PWR-IE170W-PC-AC=: 5.93 x 3.72 x 5.60 in. (150.6 x 94.5 x 142.2mm)</li> <li>• PWR-IE170W-PC-DC=: 5.93 x 4.47 x 5.75 in. (150.6 x 113.5 x 145.8mm)</li> </ul>
<b>Weight</b>	<ul style="list-style-type: none"> <li>• IE-2000 6 ports chassis: 2.45 lbs (1.11 kg)</li> <li>• IE-2000 6 ports (SFP): 2.69 lbs (1.22 kg)</li> <li>• IE-2000 10 ports short chassis: 2.75 lbs (1.25 kg)</li> <li>• IE-2000 10 ports long chassis: 3.45 lbs (1.56 kg)</li> <li>• IE-2000 18-20 ports chassis: 4.35 lbs (1.97 kg)</li> <li>• PWR-IE50W-AC=: 1.4 lb (0.65 kg)</li> <li>• PWR-IE50W-AC-IEC=: 1.4 lb (0.65 kg)</li> <li>• PWR-IE65W-PC-DC=: 2.6 (1.18 Kg)</li> <li>• PWR-IE65W-PC-AC=: 2.7 (1.24 Kg)</li> <li>• PWR-IE170W-PC-AC=: 3.88 pounds (1.76 kg)</li> <li>• PWR-IE170W-PC-DC=: 3.7 pounds (1.67 kg)</li> </ul>

**Table 4.** IE 2000 Series Power Supplies

Product Number	Wattage	Rated Nominal Input Operating Range	Supported Input Voltage Operating Range	Power Output	PoE/PoE+ Support	Use Case Scenario
<b>PWR-IE170W- PC-AC=</b>	170W	AC 100-240V/2.3A 50-60Hz or DC 125-250V/2.1A	AC 90-264V or DC 106-300V	54VDC/3.15A	Yes	Maximum PoE/PoE+ port support in a AC or high DC environment <sup>1</sup>
<b>PWR-IE170W- PC-DC=</b>	170W	DC 12-54V/23A	DC 10.8-60V	54VDC/3.15A	Yes	Maximum PoE/PoE+ port support in a DC environment <sup>1</sup>
<b>PWR-IE50W- AC=</b>	50W	AC 100-240V/1.25A 50-60Hz or DC 125-250V/1.25A	AC 90-264V or DC 106-300V	24VDC/2.1A	No	Provides power to main system, not used for PoE in an AC or high DC environment
<b>PWR-IE50W- AC-IEC=</b>	50W	AC 100-240V/1.25A 50-60Hz	AC 90-264V	24VDC/2.1A	No	Provides power to main system, not used for PoE in DC environment

Product Number	Wattage	Rated Nominal Input Operating Range	Supported Input Voltage Operating Range	Power Output	PoE/PoE+ Support	Use Case Scenario
<b>PWR-IE65W- PC-AC=</b>	65W	AC 100-240V/1.4A 50-60Hz or DC 125-250V/1.0A	AC 90-264V or DC 106-300V	54VDC/1.2 A	Yes	Supports up to 4 ports PoE or 2 ports PoE+ when used in PoE power input in an AC or high DC environment
<b>PWR-IE65W- PC-DC=</b>	65W	DC 24-48VDC/4.5A	DC 18-60V	54VDC/1.2 A	Yes	Supports up to 4 ports PoE or 2 ports PoE+ when used in PoE power input in a DC environment

<sup>1</sup> The 170W (both AC and DC) power supplies have enough power for the base unit and the PoE. Connect one power output from the 170W PSU to the main power input of the IE2000, and the other power output of the 170W PSU to the PoE power input of the IE2000.

**Table 5.** Cisco IE 2000 Software Features

LAN Lite License (Default)	Features
<b>Layer 2 Switching</b>	IEEE 802.1, 802.3, 802.3at, 802.3af standard (see Table 6), VTPv2, NTP, UDLD, CDP, LLDP, Unicast MAC filter, Resilient Ethernet Protocol (REP)
<b>Security</b>	SCP, SSH, SNMPv3, TACACS+, RADIUS Server/Client, MAC Address Notification, BPDU Guard, SPAN session
<b>Multicast</b>	IGMPv1, v2, v3 Snooping, IGMP filtering, IGMP Querier
<b>Management</b>	Fast Boot, Express Setup, Web Device Manager, CNA, Cisco Prime, LMS, MIB, SmartPort, SNMP, syslog
<b>Industrial Ethernet</b>	EtherNet/IP, Profinet v2 MRP (IEC 62439-2) Manager and Client modes
LAN Base License	Additional Features
<b>Layer 2 Switching</b>	VTPv3, EtherChannel, Voice VLAN, Flexlink
<b>Security</b>	IPv4 Port-Security, DHCP Snooping, Dynamic ARP Inspection, IP Source Guard, 802.1x, Guest VLAN, MAC Authentication Bypass, 802.1x Multi-Domain Authentication, Storm Control, Trust Boundary, Access-List (ACL)
<b>Quality of Service</b>	IPv4 Ingress Policing, Rate-Limit, Egress Queuing/Shaping, AutoQoS
<b>Management</b>	Port-Based DHCP, Storm Control - Unicast, Multicast, Broadcast, SPAN Sessions, RSPAN, DHCP Server, Customized TCAM/SDM Size Configuration, Embedded Event Manager (EEM)
<b>Industrial Ethernet</b>	IEEE 1588 PTPv2,
<b>IPv4 Routing</b>	IPv4 static routing
<b>IPv6 Routing</b>	IPv6 host support, HTTP over IPv6, SNMP over IPv6
Enhanced LAN Base	Additional Features
<b>Industrial Management</b>	Layer 2 switching with 1:1 static Network Address Translation (NAT)
IP Lite License	Additional Features
<b>IPv4 Routing</b>	RIP, OSPF, EIGRP, VRF Lite
<b>IPv6 Routing</b>	IPv6 Static routing, OSPFv3
<b>Security</b>	FIPS 140-2
<b>Embedded Event Manager</b>	EEM feature enabled with IP Lite License

**Table 6.** Compliance Specifications

Description	Specification
<b>Safety Certifications</b>	<ul style="list-style-type: none"> <li>• UL/CSA 60950-1</li> <li>• EN 60950-1</li> <li>• CB to IEC 60950-1 (with country deviations)</li> <li>• NOM to NOM-019-SCF1 (through partners and distributors)</li> <li>• CE Marking</li> </ul>

Description	Specification
<b>Hazard Location</b>	<ul style="list-style-type: none"> <li>• ANSI/ISA 12.12.01 (Class1, Div2 A-D)<sup>†</sup></li> <li>• EN 60079-0, -15 ATEX Certificate (Class 1, Zone2 A-D)<sup>†</sup></li> </ul> Cabinet enclosure required
<b>EMC Emissions and Immunity Compliance</b>	<ul style="list-style-type: none"> <li>• FCC 47 CFR Part 15 Class A</li> <li>• EN 55022A Class A</li> <li>• VCCI Class A</li> <li>• RoHS compliance</li> <li>• AS/NZS CISPR 22 Class A, AS/NZS CISPR 24</li> <li>• CISPR11 Class A, CISPR22 Class A</li> <li>• ICES 003 Class A</li> <li>• KCC -Korea</li> <li>• CE Marking</li> <li>• C-Tick (Australia)</li> <li>• Russia certification</li> <li>• Brazil certification</li> <li>• IEC/EN/EN61000-4-2 (Electro Static Discharge), 15kV air/8kV contact</li> <li>• IEC/EN 61000-4-3 (Radiated Immunity, 10 and 20 V/m)</li> <li>• IEC/EN 61000-4-4 (Fast Transients - 4kV power line, 4kV data line)</li> <li>• IEC/EN 61000-4-5 (Surge 2 kV/1 kV)</li> <li>• IEC/EN 61000-4-6 (Conducted Immunity, 10 V/emf)</li> <li>• IEC/EN 61000-4-8 (Power Frequency Magnetic Field Immunity)</li> <li>• IEC/EN 61000-4-9 (Pulse Magnetic Field Immunity)</li> <li>• IEC/EN 61000-4-10 (Oscillatory Magnetic Field Immunity)</li> <li>• IEC/EN 61000-4-11 (AC power Voltage Immunity)</li> <li>• IEC/EN 61000-4-29 (Voltage Dips Immunity)</li> <li>• IEC/EN 61000-6-1 (Immunity for Light Industrial Environments)</li> <li>• IEC/EN 61000-6-2 (Immunity for Industrial Environments)</li> <li>• IEC/EN 61000-6-4 Class A</li> <li>• EN 61326</li> </ul>
<b>Shock and Vibration</b>	<ul style="list-style-type: none"> <li>• IEC 60068-2-27 (Operational Shock: 30G 11ms, half sine)</li> <li>• IEC 60068-2-27 (Non-Operational Shock 55-70G, trapezoidal)</li> <li>• IEC 60068-2-6, IEC 60068-2-64, EN 61373 (Operational Vibration)</li> <li>• IEC 60068-2-6, IEC 60068-2-64, EN 61373 (Non-operational Vibration)</li> </ul>
<b>Industry Standards</b>	<ul style="list-style-type: none"> <li>• UL508</li> <li>• CSA C22.2 No. 142</li> <li>• EN 61131-2 (EMC/EMI, environmental, mechanical)</li> <li>• Protective coating (specific models only)</li> <li>• Marine DnV</li> <li>• Substation KEMA (IEEE 1613, IEC 61850-3)</li> <li>• Railway EN 50155 (EMI/EMC, environmental, mechanical)</li> <li>• EN50121-3-2</li> <li>• EN50121-4</li> <li>• NEMA TS-2 (EMC, environmental, mechanical)</li> <li>• ABB Industrial IT certification</li> <li>• IP30</li> <li>• ODVA Industrial Ethernet/IP support</li> <li>• PROFINETv2.3 support</li> </ul>
<b>Corrosive Testing</b>	<ul style="list-style-type: none"> <li>• ISO-12944-6</li> <li>• IEC-60068-2-60</li> </ul>
<b>Humidity</b>	<ul style="list-style-type: none"> <li>• IEC 60068-52-2 (salt fog mist, test Kb) marine environments</li> <li>• IEC 60068 -2-3</li> <li>• IEC 60068-2-30</li> <li>• Relative humidity: 5% to 95% non-condensing</li> </ul>

Description	Specification
<b>Operating Temperature</b>	<ul style="list-style-type: none"> <li>• -40C to +70C (vented enclosure - 40 LFM Air Flow)</li> <li>• -40C to +60C (sealed enclosure – 0 LFM Air Flow)</li> <li>• -34C to +75C (fan or blower-equipped enclosure – 200 LFM Air Flow)</li> <li>• -40C to +85C (IEC 60068-2-2 Environmental Type Testing – 16 hours)</li> <li>• Operational altitude: Up to 15,000 ft</li> </ul>
<b>Storage Temperature</b>	<ul style="list-style-type: none"> <li>• -40 C to +85 C (storage temperature)</li> <li>• IEC 60068-2-14</li> <li>• Storage altitude: Up to 15,000 ft</li> </ul>
<b>Mean Time Between Failure (MTBF)</b>	<ul style="list-style-type: none"> <li>• Mean time between failure: 374,052 hours (42.7 years)</li> </ul>
<b>Warranty</b>	<ul style="list-style-type: none"> <li>• Five-year limited warranty on all IE-2000 HW PIDs and all IE Power Supplies defined in table 4 above. See link below for details on warranty.</li> </ul>

**Table 7.** Management and Standards

Description	Specification	Specification
<b>IEEE Standards</b>	<ul style="list-style-type: none"> <li>• IEEE 802.1D MAC bridges, STP</li> <li>• IEEE 802.1p Layer 2 COS prioritization</li> <li>• IEEE 802.1q VLAN</li> <li>• IEEE 802.1s Multiple Spanning-Trees</li> <li>• IEEE 802.1w Rapid Spanning-Tree</li> <li>• IEEE 802.1x Port Access Authentication</li> <li>• IEEE 802.1AB LLDP</li> <li>• IEEE 802.3ad Link Aggregation (LACP)</li> <li>• IEEE 802.3af Power over Ethernet provides up to 15.4W DC power to each end device</li> <li>• IEEE 802.3at Power over Ethernet provides up to 25.5W DC power to each end device</li> </ul>	<ul style="list-style-type: none"> <li>• IEEE 802.3af Power over Ethernet</li> <li>• IEEE 802.3at Power over Ethernet Plus</li> <li>• IEEE 802.3ah 100BASE-X SMF/MMF only</li> <li>• IEEE 802.3x full duplex on 10Base-T</li> <li>• IEEE 802.3 10BASE-T specification</li> <li>• IEEE 802.3u 100BASE-TX specification</li> <li>• IEEE 802.3ab 1000BASE-T specification</li> <li>• IEEE 802.3z 1000BASE-X specification</li> <li>• IEEE 1588v2 PTP Precision Time Protocol</li> </ul>
<b>RFC Compliance</b>	<ul style="list-style-type: none"> <li>• RFC 768: UDP</li> <li>• RFC 783: TFTP</li> <li>• RFC 791: IPv4 protocol</li> <li>• RFC 792: ICMP</li> <li>• RFC 793: TCP</li> <li>• RFC 826: ARP</li> <li>• RFC 854: Telnet</li> <li>• RFC 951: BootP</li> <li>• RFC 959: FTP</li> <li>• RFC 1157: SNMPv1</li> <li>• RFC 1901,1902-1907 SNMPv2</li> <li>• RFC 2273-2275: SNMPv3</li> <li>• RFC 2571: SNMP Management</li> <li>• RFC 1166: IP Addresses</li> <li>• RFC 1256: ICMP Router Discovery</li> </ul>	<ul style="list-style-type: none"> <li>• RFC 1305: NTP</li> <li>• RFC 1492: TACACS+</li> <li>• RFC 1493: Bridge MIB Objects</li> <li>• RFC 1534 DHCP and BootP interoperation</li> <li>• RFC 1542: Bootstrap Protocol</li> <li>• RFC 1643: Ethernet Interface MIB</li> <li>• RFC 1757: RMON</li> <li>• RFC 2068: HTTP</li> <li>• RFC 2131, 2132: DHCP</li> <li>• RFC 2236: IGMP v2</li> <li>• RFC 3376: IGMP v3</li> <li>• RFC 2474: DiffServ Precedence</li> <li>• RFC 3046: DHCP Relay Agent Information Option</li> <li>• RFC 3580: 802.1x RADIUS</li> <li>• RFC 4250-4252 SSH Protocol</li> </ul>

Description	Specification	Specification
<b>Simple Network Management Protocol (SNMP) MIB Objects</b>	<ul style="list-style-type: none"> <li>• BRIDGE-MIB</li> <li>• CALISTA-DPA-MIB</li> <li>• CISCO-ACCESS-ENVMON-MIB</li> <li>• CISCO-ADMISSION-POLICY-MIB</li> <li>• CISCO-AUTH-FRAMEWORK-MIB</li> <li>• CISCO-BRIDGE-EXT-MIB</li> <li>• CISCO-BULK-FILE-MIB</li> <li>• CISCO-CABLE-DIAG-MIB</li> <li>• CISCO-CALLHOME-MIB</li> <li>• CISCO-CAR-MIB</li> <li>• CISCO-CDP-MIB</li> <li>• CISCO-CIRCUIT-INTERFACE-MIB</li> <li>• CISCO-CLUSTER-MIB</li> <li>• CISCO-CONFIG-COPY-MIB</li> <li>• CISCO-CONFIG-MAN-MIB</li> <li>• CISCO-DATA-COLLECTION-MIB</li> <li>• CISCO-DHCP-SNOOPING-MIB</li> <li>• CISCO-ENTITY-ALARM-MIB</li> <li>• CISCO-ENTITY-VENDORTYPE-OID-MIB</li> <li>• CISCO-ENVMON-MIB</li> <li>• CISCO-ERR-DISABLE-MIB</li> <li>• CISCO-FLASH-MIB</li> <li>• CISCO-FTP-CLIENT-MIB</li> <li>• CISCO-IF-EXTENSION-MIB</li> <li>• CISCO-IGMP-FILTER-MIB</li> <li>• CISCO-IMAGE-MIB</li> <li>• CISCO-IP-STAT-MIB</li> <li>• CISCO-LAG-MIB</li> <li>• CISCO-LICENSE-MGMT-MIB</li> <li>• CISCO-MAC-AUTH-BYPASS-MIB</li> <li>• CISCO-MAC-NOTIFICATION-MIB</li> <li>• CISCO-MEMORY-POOL-MIB</li> <li>• CISCO-PAE-MIB</li> <li>• CISCO-PAGP-MIB</li> <li>• CISCO-PING-MIB</li> <li>• CISCO-PORT-QOS-MIB</li> <li>• CISCO-PORT-SECURITY-MIB</li> <li>• CISCO-PORT-STORM-CONTROL-MIB</li> <li>• CISCO-PRIVATE-VLAN-MIB</li> <li>• CISCO-PROCESS-MIB</li> <li>• CISCO-PRODUCTS-MIB</li> <li>• CISCO-RESILIENT-ETHERNET-PROTOCOL-MIB</li> <li>• CISCO-RTTMON-ICMP-MIB</li> <li>• CISCO-RTTMON-IP-EXT-MIB</li> <li>• CISCO-RTTMON-MIB</li> <li>• CISCO-RTTMON-RTP-MIB</li> </ul>	<ul style="list-style-type: none"> <li>• CISCO-SNMP-TARGET-EXT-MIB</li> <li>• CISCO-STACK-MIB</li> <li>• CISCO-STACKMAKER-MIB</li> <li>• CISCO-STP-EXTENSIONS-MIB</li> <li>• CISCO-SYSLOG-MIB</li> <li>• CISCO-TCP-MIB</li> <li>• CISCO-UDLDP-MIB</li> <li>• CISCO-VLAN-IFTABLE-RELATIONSHIP-MIB</li> <li>• CISCO-VLAN-MEMBERSHIP-MIB</li> <li>• CISCO-VTP-MIB</li> <li>• ENTITY-MIB</li> <li>• ETHERLIKE-MIB</li> <li>• HC-RMON-MIB</li> <li>• IEEE8021-PAE-MIB</li> <li>• IEEE8023-LAG-MIB</li> <li>• IF-MIB</li> <li>• IP-FORWARD-MIB</li> <li>• IP-MIB</li> <li>• LLDP-EXT-MED-MIB</li> <li>• LLDP-MIB</li> <li>• NETRANGER</li> <li>• NOTIFICATION-LOG-MIB</li> <li>• OLD-CISCO-CHASSIS-MIB</li> <li>• OLD-CISCO-CPU-MIB</li> <li>• OLD-CISCO-FLASH-MIB</li> <li>• OLD-CISCO-INTERFACES-MIB</li> <li>• OLD-CISCO-IP-MIB</li> <li>• OLD-CISCO-MEMORY-MIB</li> <li>• OLD-CISCO-SYS-MIB&lt;</li> <li>• OLD-CISCO-SYSTEM-MIB</li> <li>• OLD-CISCO-TCP-MIB</li> <li>• OLD-CISCO-TS-MIB</li> <li>• RMON-MIB</li> <li>• RMON2-MIB</li> <li>• SMON-MIB</li> <li>• SNMP-COMMUNITY-MIB</li> <li>• SNMP-FRAMEWORK-MIB</li> <li>• SNMP-MPD-MIB</li> <li>• SNMP-NOTIFICATION-MIB</li> <li>• SNMP-PROXY-MIB</li> <li>• SNMP-TARGET-MIB</li> <li>• SNMP-USM-MIB</li> <li>• SNMP-VIEW-BASED-ACM-MIB</li> <li>• SNMPv2-MIB</li> <li>• TCP-MIB</li> <li>• UDP-MIB</li> </ul>

**Table 8.** SFP Transceivers

Part Number	Specification	SFP Type	Max Distance	Cable Type	Temp Range*	DOM Support
<b>GLC-FE-100FX-RGD=</b>	100BASE-FX	FE	2km	MMF	IND	Yes
<b>GLC-FE-100LX-RGD</b>	100BASE-LX10	FE	10km	SMF	IND	Yes
<b>GLC-FE-T-I=</b>	100BASE-T	FE	100m	Copper	IND	NA
<b>GLC-FE-100FX=</b>	100BASE-FX	FE	2km	SMF	COM	No



Part Number	Specification	SFP Type	Max Distance	Cable Type	Temp Range*	DOM Support
GLC-FE-100LX=	100BASE-LX10	FE	10km	SMF	COM	No
GLC-FE-100EX=	100BASE-EX	FE	40km	SMF	COM	No
GLC-FE-100ZX=	100BASE-ZX	FE	80km	SMF	COM	No
GLC-FE-100BX-D=	100BASE-BX10	FE	10km	SMF	COM	No
GLC-FE-100BX-U=	100BASE-BX10	FE	10km	SMF	COM	Yes
GLC-SX-MM-RGD=	1000BASE-SX	GE	550m	MMF	IND	Yes
GLC-LX-SM-RGD=	1000BASE-LX/LH	GE	550m/10km	MMF/SMF	IND	Yes
GLC-ZX-SM-RGD=	1000BASE-ZX	GE	70km	SMF	IND	Yes
GLC-BX40-U-I=	1000BASE-BX40	GE	40km	SMF	IND	Yes
GLC-BX40-D-I=	1000BASE-BX40	GE	40km	SMF	IND	Yes
GLC-BX40-DA-I=	1000BASE-BX40	GE	40km	SMF	IND	Yes
GLC-BX80-U-I=	1000BASE-BX80	GE	80km	SMF	IND	Yes
GLC-BX80-D-I=	1000BASE-BX80	GE	80km	SMF	IND	Yes
GLC-SX-MMD=	1000BASE-SX	GE	550m	MMF	EXT	Yes
GLC-LH-SMD=	1000BASE-LX/LH	GE	550m/10km	MMF/SMF	EXT	Yes
GLC-EX-SMD=	1000BASE-EX	GE	40km	SMF	EXT	Yes
GLC-ZX-SMD=	1000BASE-ZX	GE	70km	SMF	EXT	Yes
GLC-BX-D=	1000BASE-BX10	GE	10km	SMF	COM	Yes
GLC-BX-U=	1000BASE-BX10	GE	10km	SMF	COM	Yes
CWDM-SFP-xxxx= (8 freq)	CWDM 1000BASE-X	GE		SMF	COM	Yes
DWDM-SFP-xxxx= (40 freq)	DWDM 1000BASE-X	GE		SMF	COM	Yes
SFP-GE-S=	1000BASE-SX	GE	550m	MMF	EXT	Yes
SFP-GE-L=	1000BASE-LX/LH	GE	550m/10km	MMF/SMF	EXT	Yes
SFP-GE-Z=	1000BASE-ZX	GE	70km	SMF	EXT	Yes
GLC-SX-MM=	1000BASE-SX	GE	550m	MMF	COM	No
GLC-LH-SM=	1000BASE-LX/LH	GE	550m/10km	MMF/SMF	COM	No
GLC-ZX-SM=	1000BASE-ZX	GE	70km	SMF	COM	Yes
GLC-TE=	1000BASE-T	GE	100m	Copper	EXT	NA
GLC-T=	1000BASE-T	GE	100m	Copper	COM	NA

**Note:** For DOM support and for first software release supporting SFP, refer to [http://www.cisco.com/en/US/products/hw/modules/ps5455/products\\_device\\_support\\_tables\\_list.html](http://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html)

MMF = multi-mode fiber

SMF = Single-mode fiber

## Warranty Information

Warranty information is available at <http://www.cisco-servicefinder.com/warrantyfinder.aspx>.

## Service and Support

Cisco is committed to reducing your total cost of ownership (TCO). We offer a portfolio of technical support services to help ensure that products operate efficiently, remain highly available, and benefit from the most up-to-date system software. The services and support programs described in Table 7 are available as part of the Cisco Desktop Switching Service and Support solution and are available directly from Cisco and through resellers.

**Table 9.** Cisco Services and Support Programs

Service and Support	Features	Benefits
<b>Advanced Services</b>		
<ul style="list-style-type: none"><li>• Cisco Total Implementation Solutions (TIS), available directly from Cisco</li><li>• Cisco Packaged TIS, available through resellers</li><li>• Cisco SMARTnet® and SMARTnet Onsite support, available directly from Cisco</li><li>• Cisco Packaged SMARTnet support program, available through resellers</li><li>• Cisco SMB Support Assistant</li></ul>	<ul style="list-style-type: none"><li>• Project management</li><li>• Site survey, configuration, and deployment</li><li>• Installation, test, and cutover</li><li>• Training</li><li>• Major moves, adds, and changes</li><li>• Design review and product staging</li><li>• 24-hour access to software updates</li><li>• Web access to technical repositories</li><li>• Telephone support through the Cisco Technical Assistance Center (TAC)</li><li>• Advance replacement of hardware parts</li></ul>	<ul style="list-style-type: none"><li>• Supplements existing staff</li><li>• Helps ensure that functions meet needs</li><li>• Mitigates risk</li><li>• Helps enable proactive or expedited issue resolution</li><li>• Lowers TCO by taking advantage of Cisco expertise and knowledge</li><li>• Reduces network downtime</li></ul>

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