

Cisco Catalyst 4000 Family

Cisco Catalyst 4000 Enhances Control of Voice, Video, and Data Traffic for Converged Networks

Introducing Cisco Catalyst 4006 Supervisor Engine III and Cisco Catalyst 4000 Family 48-Port 10/100/1000 Line Card

Overview

The Cisco Catalyst[®] 4000 integrates nonblocking Layer 2/3/4 switching with enhanced control, enabling business agility for enterprise and metropolitan Ethernet customers deploying Internet-based applications (Figure 1). As a key component of Cisco AVVID (Architecture for Voice, Video and Integrated Data), the Cisco Catalyst 4000 extends control from the backbone to the network edge with intelligent network services, including advanced quality of service (QoS), scalable performance, comprehensive security, and simple manageability. The modular architecture, media flexibility, and expandability of the Cisco Catalyst 4000 enable a longer deployment life in converged networks. A longer deployment life reduces the overall cost of ownership by minimizing recurring operational expenses and improves return on investment (ROI).

The Cisco Catalyst 4006 Supervisor Engine III (Figure 2) delivers intelligent network services and control required for a converged wiring closet while also offering high-performance Layer 3/4 switching capabilities to allow for deployment in small backbones or Layer 3 distribution points. The Supervisor Engine III offers an extensive feature set with the simplicity of traditional LAN switching, multilayer services such as IP routing, advanced QoS, sophisticated traffic management, improved security, and simple management.

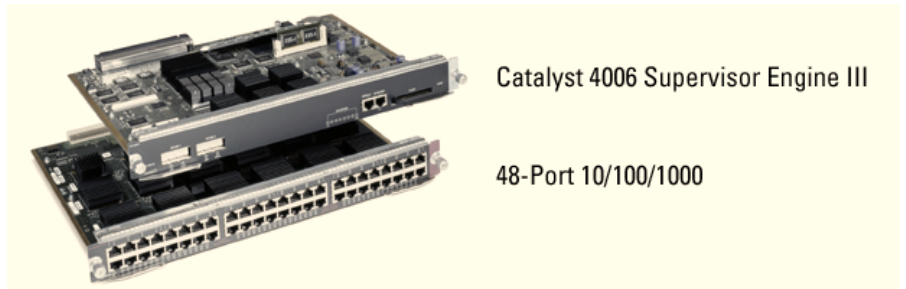
The Cisco Catalyst 4000 48-Port 10/100/1000BASE-T Line Card (RJ-45) (Figure 2) delivers the industry's highest-density, triple-speed, autosensing 10/100/1000 connectivity from the network edge to the desktop. This new line card is affordable for every desktop in the enterprise. Now at the same port density as 10/100, the 10/100/1000 line card provides wiring-closet investment protection by allowing 10 Mbps, 100 Mbps, and 1000 Mbps on the same interface for flexibility and seamless migration to Gigabit Ethernet.

Figure 1
Cisco Catalyst 4003
and 4006





Figure 2
Cisco Catalyst 4006
Supervisor Engine III and
Cisco Catalyst 4000
48-Port 10/100/1000 Line
Card



Cisco Catalyst 4006 System

The Cisco Catalyst 4000 Family, now with two chassis alternatives and three supervisor-engine alternatives, provides a common architecture that scales to 240 ports of 10/100 or 100BASE-FX Fast Ethernet, or 240 ports of 1000BASE-LX or 10/100/1000BASE-T Gigabit Ethernet. The Cisco Catalyst 4006 enhances the Cisco commitment to affordable enterprise and branch scalability, providing a cost-effective flexible network solution that scales to meet today's high-performance needs with investment protection.

Configuration Alternatives

The Cisco Catalyst 4000 Family with Supervisor Engine III, 10/100/1000 autosensing Fast Ethernet/Gigabit Ethernet, and 100-Mbps Fast Ethernet fiber line cards now offers an even more powerful and flexible network solution. This enables specific network configurations to be mixed and matched to meet the specific needs of any campus network (Table 1).

Table 1 Cisco Catalyst 4000 Family Port Densities

Cisco Catalyst 4000 Family Switching Modules	Number of Interfaces Supported per Line Card	Cisco Catalyst 4003 with Supervisor I	Cisco Catalyst 4006 with Supervisor II or III
Switched 10/100 Fast Ethernet (RJ-45)	32 or 48	96	240
Switched 10/100 Fast Ethernet (RJ-21)	48	96	240
Switched 100 Fast Ethernet (MT-RJ)	4, 24, or 48	96	240
Switched 1000 Gigabit Ethernet (fiber)	2 or 6, 18 or 48	96	240
Switched 1000BASE-T Gigabit Ethernet	12, 24, or 48	96	240

Cisco Catalyst 4000 Family solutions now can be built with three powerful supervisor-engine alternatives. Each provides a high-performance, centralized, shared-memory switch fabric, while protecting your line card investment by supporting the addition of optional higher-layer functionality engines (Table 2).

Table 2 Cisco Catalyst 4000 Family Supervisor Engine Features

Feature	Cisco Catalyst 4003 Supervisor Engine I	Cisco Catalyst 4006 Supervisor Engine II	Cisco Catalyst 4006 Supervisor Engine III
Cisco Catalyst 4003 chassis support	X		
Cisco Catalyst 4006 chassis support		X	X



Table 2 Cisco Catalyst 4000 Family Supervisor Engine Features

Feature	Cisco Catalyst 4003 Supervisor Engine I	Cisco Catalyst 4006 Supervisor Engine II	Cisco Catalyst 4006 Supervisor Engine III
Switching fabric	One 24-Gbps switching engine	Three 24-Gbps switching engines	One 64-Gbps switching engine
Switching throughput	18 Mpps (Layer 2)	18 Mpps (Layer 2)	48 Mpps (Layer 2/3/4) Cisco Express Forwarding
Multilayer switching	Layer 2	Layer 2	Integrated Layer 2/3/4
Dual Gigabit Ethernet uplinks		X	X
Operating system	Catalyst OS	Catalyst OS	Cisco IOS® Software
Maximum number of Media Access Control (MAC) addresses dynamically allocated between active ports	16,384	16,384	32,768
QoS	System-based: <ul style="list-style-type: none"> • Classification • Scheduling 	System-based <ul style="list-style-type: none"> • Classification • Scheduling 	Port-based: <ul style="list-style-type: none"> • Classification • Scheduling • Marking (class and type of service [CoS and ToS])
Bandwidth management	–None	–None	<ul style="list-style-type: none"> • Policing (1024 ingress and egress policers) • Shaping and sharing
Access control lists (ACLs)	Supported in hardware with Layer 3 services engine (IP only)	Supported in hardware with Layer 3 services engine (IP only)	Supported in hardware based on IP and MAC address
Queues	Two	Two	Four
Multicast	<ul style="list-style-type: none"> • Hardware-based Protocol Independent Multicast (PIM) • Cisco Group Management Protocol client 	<ul style="list-style-type: none"> • Hardware-based PIM • Cisco Group Management Protocol client 	<ul style="list-style-type: none"> • Hardware-based PIM • Cisco Group Management Protocol server • Internet Group Management Protocol (IGMP) v1, v2, v3 • IGMP snooping • Distance Vector Multicast Routing Protocol (DVMRP) • Source-Specific Multicast (SSM)
Removable compact Flash			X
Hardware support for 4096 virtual LAN (VLAN) numbering	X	X	X
Environmental status of switch	X	X	X



Table 2 Cisco Catalyst 4000 Family Supervisor Engine Features

Feature	Cisco Catalyst 4003 Supervisor Engine I	Cisco Catalyst 4006 Supervisor Engine II	Cisco Catalyst 4006 Supervisor Engine III
Simple Network Management Protocol (SNMP) v1/2/3	X	X	X
Remote Monitoring (RMON)	X	X	X
Spanning Tree per VLAN (STPV)	Yes	Yes	Yes
Console/Telnet interface	X	X	X
Out-of-Band Management (RJ-45)	10 Mbps	10/100 Mbps	10/100 Mbps
Cisco Fast EtherChannel [®] and Gigabit EtherChannel technology across line cards	X	X	X
Fabric	Store and forward	Store and forward	Store and forward
Architecture	Modular/shared memory	Modular/shared memory	Modular/shared memory

Note: For a more detailed list of Cisco Catalyst 4006 Supervisor Engine III features, refer to the Cisco Catalyst 4006 Supervisor Engine III data sheet located on the Cisco Catalyst 4000 Series site:

<http://www.cisco.com/warp/public/cc/pd/si/casi/ca4000/>

Cisco Catalyst 4000 Family solutions can be built with two powerful chassis alternatives. Each provides enterprise-class functionality (Table 3), yet is optimized in ways to ensure cost-effective pricing.

Table 3 Cisco Catalyst 4000 Family Chassis Features

Feature	Cisco Catalyst 4003 Chassis	Cisco Catalyst 4006 Chassis
Total number of slots	3	6
Supervisor Engine Supported	Supervisor I	Supervisor II or III
Number of hot-swappable switching module slots	2	5
Switching modules supported	All (except WS-X4019)	All
Number of power-supply bays	2	3
AC input power	Yes	Yes
DC input power	Yes	Yes
Integrated inline DC power IP phone support	No	Yes
External Inline DC power IP phone support	Yes	Yes
Minimum power supplies	1	2
Number of fan-tray bays	1	1
WAN integration	Yes	Yes



Table 3 Cisco Catalyst 4000 Family Chassis Features

Feature	Cisco Catalyst 4003 Chassis	Cisco Catalyst 4006 Chassis
Rack mount	Center, front	Center, front

The industry-proven Cisco IOS network service strategy spans years of customer-suggested evolution to meet the most demanding network needs. Networks benefit from the breadth and depth of these network services and mature protocols.

Configuration Flexibility and Modular Superiority

The Cisco Catalyst 4003 and 4006 offer a comprehensive, scalable suite of 10/100/1000-Mbps Ethernet switch modules that deliver hot-swappable, “plug-and-play” enterprise intelligence today, while providing easy growth and flexible protection to keep pace with the increasing network demands of tomorrow. A variety of Cisco Catalyst 4000 Family modules are available, which can be mixed and matched to suit a wide range of wiring-closet, data-center, or branch-office deployment. All Gigabit Ethernet ports can be 1000BASE-SX, 1000BASE-LX/LH, or 1000BASE-ZX by using flexible, hot-swappable gigabit interface converter (GBIC) modules. The Cisco Catalyst 4000 Family supports the following switching modules:

- *48-port 10/100/1000-Mbps Gigabit Ethernet (RJ-45)—WS-X4448-GB-RJ45*: This module, with multispeed autosensing, autonegotiating technology, provides wiring-closet investment protection by allowing Fast Ethernet desktops today to migrate to Gigabit Ethernet in the future without replacing the switch line cards. All 48 ports can be used at 10 Mbps, 100 Mbps, or 1000 Mbps up to 100 meters over Category 5 copper cabling. The 48 ports can burst to Gigabit Ethernet line rate and share 12 Gbps of full-duplex bandwidth into the switching fabric. The amount of oversubscription can be controlled simply by varying the number of ports used at 1000 Mbps. All ports use the standard IEEE 802.3x flow-control (pause frame) mechanism to control Gigabit Ethernet host traffic.
- *48-port 10/100-Mbps Ethernet (RJ-45)—WS-X4148-RJ*: This module provides 48 ports of dedicated 10/100 Ethernet switching for Ethernet or Fast Ethernet client or server switching. All ports can utilize Cisco Fast EtherChannel technology for higher-speed uplinks or server connections.
- *48-port 10/100-Mbps Ethernet with inline power (RJ-45)—WS-X4148-RJ45V*: The inline power 10/100BASE-T Ethernet switching module supports up to 48 ports per module (RJ-45 interfaces). Along with phone discovery, these modules support autosensing/autonegotiation to determine the speed and duplex mode of the attached device. The Cisco Catalyst 4003 uses the Cisco Catalyst Inline Power Patch Panel to provide inline power. The Cisco Catalyst 4006, with support for up to 240 multiservice ports, directly provides inline power. To support the new demand for phone power and wireless LAN, Cisco has developed a new auxiliary DC power shelf that supplies the Cisco Catalyst 4006 with the 48 volts needed for inline power.
- *48-port 100-Mbps Ethernet (RJ-21 telco)—WS-X4148-RJ21*: This module provides 48 ports of dedicated 100 Ethernet switching for Fast Ethernet client or server switching. All ports can utilize Cisco Fast EtherChannel technology for higher-speed uplinks or server connections.
- *Layer 3 Services Engine—32-port 10/100-Mbps Ethernet plus two-port Gigabit Ethernet uplinks—WS-X4232-L3*: This module enables Layer 3 services to all Cisco Catalyst 4000 Family supervisor engines, delivering Layer 3 routing to the entire chassis. In addition, this module provides 32 ports of dedicated 10/100 Ethernet switching for Ethernet or Fast Ethernet client or server switching, along with two dedicated Gigabit Ethernet connections for Cisco Gigabit EtherChannel connection to a high-speed core or Gigabit Ethernet server connections. All 10/100 ports can utilize Cisco Fast EtherChannel technology for higher-speed uplinks or server connections.



- *WAN Access Gateway Module—WS-X4604-GWY*: The Cisco Catalyst 4000 Access Gateway Module (AGM) integrates Cisco IOS routing and Cisco CallManager voice services into the successful Cisco Catalyst 4000 Series of switches. Combining the LAN and WAN infrastructure enables businesses to reduce network complexity, improve network deployment times, and prepare for voice, video, and data convergence.
- *24-port 100-Mbps Ethernet 100BASE-FX (MT-RJ)—WS-X4124-FX-MT*: This module provides 24 ports of dedicated 100 Fast Ethernet client or server switching. All ports can utilize Cisco Fast EtherChannel technology for higher-speed uplinks or server connections.
- *48-port 100-Mbps Ethernet 100BASE-FX (MT-RJ)—WS-X4148-FX-MT*: The 48-port line card (single slot) is based on the same architecture as the 24-port 100BASE-FX line card with MT-RJ connectors. Both line cards offer the security and resiliency features of fiber-optic cable plants, optimizing them for networks with concerns for distance limitations, intrusion, or radio frequency interference. Government agencies or enterprise customers that process confidential information or offer e-commerce are optimal candidates for these line cards.
- *32-port 10/100-Mbps Ethernet plus two-port Gigabit Ethernet uplinks—WS-X4232-GB-RJ*: This module provides 32 ports of dedicated 10/100 Ethernet switching for Ethernet or Fast Ethernet client or server switching, along with two dedicated Gigabit Ethernet connections for Cisco Gigabit EtherChannel connection to a high-speed core or Gigabit Ethernet server connections. All 10/100 ports can utilize Cisco Fast EtherChannel technology for higher-speed uplinks or server connections.
- *32-port 10/100-Mbps Ethernet BASE- plus modular uplink support—WS-X4232-RJ-XX*: This module provides 32 ports of dedicated 10/100 Ethernet switching for Ethernet or Fast Ethernet client or server switching. Optional uplink daughter cards provide four-port 100BASE-FX multimode fiber connections when attached to the 32-port 10/100BASE- card. All ports can use a Cisco EtherChannel connection to connect to a high-speed core or Gigabit Ethernet server. All 10/100 ports can utilize Cisco Fast EtherChannel technology for higher-speed uplinks or server connections.
- *Four-port 100-Mbps Fast Ethernet uplink module—WS-U4504-FX-MT*: This daughter-card option provides four ports of dedicated 100 Fast Ethernet (multimode) switching for client or server switching (*Note*: requires the 32-port 10/100-Mbps Ethernet BASE- card).
- *Six-port Gigabit Ethernet (GBIC slot)—WS-X4306-GB*: This module provides six ports of dedicated 1000BASE-X Gigabit Ethernet uplinks for high-speed backbone switch-to-switch applications or smaller server-farm applications. It makes use of versatile GBIC technology, so intra-building multimode connections can be intermixed with long-distance campus single-mode connections. All ports can utilize Cisco Gigabit EtherChannel technology for high-speed interconnection applications.
- *18-port Gigabit Ethernet (GBIC slot)—WS-X4418-GB*: This module is targeted specifically at building cost-effective 1000BASE-X Gigabit Ethernet server farms, rather than backbone switch-to-switch applications. It provides two dedicated Gigabit Ethernet uplinks, as well as up to 16 ports per module for high-performance Gigabit Ethernet server connectivity. The 16 server ports can burst to Gigabit Ethernet line rate and share 8 Gbps of full-duplex bandwidth into the switching fabric. Because all ports use GBICs, the amount of oversubscription can be controlled simply by varying the number of GBICs used. The server ports use the standard IEEE 802.3x flow-control (pause frame) mechanism to control Gigabit Ethernet host traffic.



- *48-port 1000BASE-LX Gigabit Ethernet module (small form-factor pluggable [SFP])—WS-X4448-GB-LX*: This module is targeted specifically at Ethernet in the first mile (EFM) opportunities. It can provide up to 240 ports of IEEE 802.3z 1000BASE-LX per Cisco Catalyst 4000 system, allowing service providers to run point-to-point Gigabit Ethernet fiber links over single-mode fiber within the access/distribution layer of the network. The module includes 48 1000BASE-LX SFP optics preloaded at the factory.
- *14-port 1000BASE-T module (12 ports RJ-45 and 2 ports GBIC slot)—WS-X4412-2GB-T*: This module is targeted at building cost-effective 1000BASE-T Gigabit Ethernet server farms. It provides two dedicated Gigabit Ethernet uplinks, as well as up to 12 ports per module for high-performance Gigabit Ethernet server connectivity. The 12 server ports can burst to Gigabit Ethernet line rate and share 8 Gbps of full-duplex bandwidth into the switching fabric. The amount of oversubscription can be controlled simply by varying the number of interfaces used. The server ports use the standard IEEE 802.3x flow-control (pause frame) mechanism to control Gigabit Ethernet host traffic.
- *24-port 10/100/1000BASE-T module (RJ-45)—WS-X4424-GB-RJ45*: This module, with multispeed autosensing, autonegotiating technology, provides wiring-closet and server-farm investment protection by allowing Fast Ethernet desktops and servers today to migrate to Gigabit Ethernet in the future without replacing the switch line cards. All 24 ports can be used at 10 Mbps, 100 Mbps, or 1000 Mbps up to 100 meters over Category 5 copper cabling. The 24 ports can burst to Gigabit Ethernet line rate and share 12 Gbps of full-duplex bandwidth into the switching fabric. The amount of oversubscription can be controlled simply by varying the number of ports used at 1000 Mbps. All ports use the standard IEEE 802.3x flow-control (pause frame) mechanism to control Gigabit Ethernet host traffic.

Technical Specifications for the Cisco Catalyst 4000 Family

Table 4 Cisco EtherChannel Technology

	Cisco Catalyst 4003 Supervisor Engine I	Cisco Catalyst 4006 Supervisor Engine II	Cisco Catalyst 4006 Supervisor Engine III
Cisco EtherChannel Technology	All 10-Mbps ports	All 10-Mbps ports	All 10-Mbps ports
Cisco Fast EtherChannel technology	All 10/100-Mbps ports; all 100-Mbps ports	All 10/100-Mbps ports; all 100-Mbps ports	All 10/100-Mbps ports; all 100-Mbps ports
Cisco Gigabit EtherChannel technology	All 1000-Mbps ports	All 1000-Mbps ports	All 1000-Mbps ports
Port Aggregation Protocol (PAgP)	Yes	Yes	Yes
Number of ports per tuple	8	8	8
Cisco EtherChannel technology across line cards	Yes	Yes	Yes

Table 5 Cisco Catalyst Supervisor Engine Memory Specifications

Specification	Cisco Catalyst 4003 Supervisor Engine I	Cisco Catalyst 4006 Supervisor Engine II	Cisco Catalyst 4006 Supervisor Engine III
Packet memory	Shared (dynamically allocated) 8 MB	Shared (dynamically allocated) 8 MB per engine	Shared (dynamically allocated) 16 MB
Nonvolatile RAM (NVRAM)	512 kB	1 MB	512 kB



Table 5 Cisco Catalyst Supervisor Engine Memory Specifications

Specification	Cisco Catalyst 4003 Supervisor Engine I	Cisco Catalyst 4006 Supervisor Engine II	Cisco Catalyst 4006 Supervisor Engine III
Flash	12 MB	16 MB	64 MB (on board; in addition to compact Flash)
SDRAM	64 MB	64 MB	256 MB
CompactFlash card option	No	No	Yes, 64- and 128-MB options

Table 6 Cisco Catalyst Supervisor Engine Indicator and Port Specifications

Specification	Cisco Catalyst 4003 Supervisor Engine I	Cisco Catalyst 4006 Supervisor Engine II	Cisco Catalyst 4006 Supervisor Engine III
Gigabit uplinks	None	2	2
System status	Green (operational)/red (faulty)	Green (operational)/red (faulty)	Green (operational)/red (faulty)
Switch utilization load	1- to 100-percent aggregate switching usage	1- to 100-percent aggregate switching usage	1- to 100-percent aggregate switching usage
Console	DB-25 female	RJ-45 female	RJ-45 female
Management port	10BASE-T, RJ-45 female	10/100BASE-TX; RJ-45 female	10/100BASE-TX; RJ-45 female

Table 7 Cisco Catalyst Supervisor Engine Software Requirements

Specification	Cisco Catalyst 4003 Supervisor Engine I	Cisco Catalyst 4006 Supervisor Engine II	Cisco Catalyst 4006 Supervisor Engine III
Software requirements	Cisco Catalyst 4000 Family Supervisor Engine Software Version 4.4(x) or higher	Cisco Catalyst 4000 Family Supervisor Engine Software Version 5.4(x) or higher	Cisco IOS Software for the Cisco Catalyst 4000 Family Version 12.1(8a)EW or higher

Table 8 Gigabit Ethernet Link Distances

Fiber Core	62.5- _m Multimode	50- _m Multimode	9/10- _m Single Mode
Fiber modal bandwidth	160/500 MHz-km 200/500 MHz-km	400/400 MHz-km 500/500 MHz-km	–
1000BASE-SX	220 m 275 m	500 m 550 m	–
1000BASE-LX/LH	550 m 550 m	550 m 550 m	10 km
1000BASE-ZX	–n/a	–n/a	70 to 100 km



Table 9 Standard Network Protocols

Standard	Cisco Catalyst 4003 Supervisor Engine I	Cisco Catalyst 4006 Supervisor Engine II	Cisco Catalyst 4006 Supervisor Engine III
Ethernet	IEEE 802.3, 10BASE-T	IEEE 802.3, 10BASE-T	IEEE 802.3, 10BASE-T
Fast Ethernet	IEEE 802.3u, 100BASE-TX	IEEE 802.3u, 100BASE-TX	IEEE 802.3u, 100BASE-TX
Fast Ethernet	IEEE 802.3, 100BASE-FX	IEEE 802.3, 100BASE-FX	IEEE 802.3, 100BASE-FX
Gigabit Ethernet	IEEE 802.3z, IEEE 802.3x, IEEE 802.3ab	IEEE 802.3z, IEEE 802.3x, IEEE 802.3ab	IEEE 802.3z, IEEE 802.3x, IEEE 802.3ab
1000BASE-X (GBIC)	<ul style="list-style-type: none"> • 1000BASE-SX • 1000BASE-LX/LH • 1000BASE-ZX 	<ul style="list-style-type: none"> • 1000BASE-SX • 1000BASE-LX/LH • 1000BASE-ZX 	<ul style="list-style-type: none"> • 1000BASE-SX • 1000BASE-LX/LH • 1000BASE-ZX
VLAN Trunking/tagging	IEEE 802.3ad IEEE 802.1Q	IEEE 802.3ad IEEE 802.1Q	IEEE 802.3ad ¹ IEEE 802.1Q
Spanning-Tree Protocol	IEEE 802.1D IEEE 802.1w IEEE 802.1s	IEEE 802.1D IEEE 802.1w IEEE 802.1s	IEEE 802.1D IEEE 802.1w ¹ IEEE 802.1s ¹
Security	IEEE 802.1x	IEEE 802.1x	IEEE 802.1x ¹

1. Supported in future software release



Network Management

- CiscoWorks2000 Network Management Suite, Resource Manager Essentials support including:
 - Inventory Manager
 - Change Audit
 - Device Configuration Manager
 - Software Image Manager
 - Availability Manager
 - Syslog Analyzer
 - Cisco Management Connection
- CiscoWorks2000 Network Management Suite, CiscoWorks for Switched Internetworks (CWSI) Campus support including:
 - Network topology discovery and display services
 - VLAN provisioning and logical display representation
 - Traffic monitoring and performance assessment
 - End-station tracking with search utilities
 - CiscoView graphical device management
 - Network topology integrity checking
 - Cisco Discovery Protocol
 - Cisco Virtual Trunking Protocol (VTP)
 - Simple Network Management Protocol (SNMP) agent Version 1 (RFCs 1155–1157)
 - SNMP Version 2c
 - Cisco Workgroup Management Information Base (MIB)
 - Ethernet MIB (RFC 1643)
 - Ethernet Repeater MIB (RFC 1516)
 - SNMP MIB II (RFC 1213)
 - Remote Monitoring (RMON) (RFC 1757)
 - Remote Monitoring II (RMON II) (RFC 2021)
 - Interface Table (RFC 1573)
 - Bridge MIB (RFC 1493)
 - Switched Port Analyzer (SPAN)
 - Enhanced Switched Port Analyzer (ESPAN)
 - Port snooping and connection steering
 - Text-based command-line interface based on the familiar Cisco Catalyst 5000 Family interface
 - Standard Cisco IOS security capabilities: passwords and TACACS+
 - Telnet, Trivial File Transfer Protocol (TFTP), BOOTP for management access



Power-supply Indicators and Interfaces

- Fan cooling: Integrated in hot-insertion/hot-extraction unit
- Good: Green (good)
- Fail: Red (faulty)
- SNMP MIB supported

Physical Specifications, Cisco Catalyst 4003 Chassis

- Dimensions (H x W x D): (10.5 x 17.25 x 12 in.), (26.6 x 43.7 x 30 cm)
- Six rack units high
- Minimum weight: 27.5 lb (12 kg)
- Maximum weight: 40 lb (18 kg)
- Mounting: 19-in. rack compatible (rack and cable guide hardware included)

Physical Specifications, Cisco Catalyst 4006 Chassis

- Dimensions (H x W x D): (15.75 x 17.25 x 12 in.) (40 x 43.7 x 30 cm)
- Ten rack units high
- Minimum weight: 40 lb (18 kg)
- Maximum weight: 54 lb (24 kg)
- Mounting: 19-in. rack compatible (rack and cable guide hardware included)

AC Power Requirements (per power supply)

- Input current:
 - 6.0A maximum @ 100 VAC 60 Hz (10%)
 - 3.0A maximum @ 200 VAC 50 Hz (10%)
- Output current: 12V @ 33.3A maximum
- KVA rating: 0.58 KVA
- Output power: 400W per power supply
- Heat dissipation: 530W (1800 BTUs per hour)
- Holdup time: 20 ms

DC Power Requirements (per power supply)

- Input current:
 - 11.6A maximum @ -48 VDC
 - 9.3A maximum @ -60 VDC
- Output current: +12V @ 33.3 A maximum
- KVA rating: 0.56 KVA
- Output power: 400W per power supply
- Heat dissipation: 555W maximum (1900 BTUs per hour)
- Holdup time: 8 ms



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 Standards Compliance

Table 10 Regulatory Standards Compliance

Specification	Standard
Regulatory Compliance	Products bearing the CE mark indicate compliance with the 1999/5/EEC directives, which include the following safety and EMC standards:
Safety	UL 1950 CAN/CSA-C22.2 No. 950 EN 60950 IEC 60950 TS 001 AS/NZS 3260
EMC	FCC Part 15 (CFR 47) Class A ICES-003 Class A EN55022 Class A CISPR22 Class A AS/NZS 3548 Class A VCCI Class A EN55022 AS/NZS 3548 Class A
Industry EMC, Safety, and Environmental Standards	GR-63-Core NEBS Level 3 GR-1089-Core Level 3 ETS 300 019 Storage Class 1.1 ETS 300 019 Transportation Class 2.3 ETS 300 019 Stationary Use Class 3.1 ETS 300 386
Telecom (E1)	CTR 12/13 CTR 4 ACA TS016
Telecom (T1)	FCC Part 68 Canada CS-03 JATE Green Book

Warranty

The warranty for the Cisco Catalyst 4000 Family is 90 days; it includes hardware replacement with a ten-day turnaround from return to manufacturer authorization (RMA).

Service and Support

Cisco offers life-cycle service and support for the Cisco Catalyst 4000 Family directly and for resale through Cisco distributors. From implementation to operation and optimization, Cisco offers advanced service and technical support services.

Advanced Service

Total Implementation Solutions (TIS) offers a full range of implementation solutions, including project management, project engineering, configuration, staging and rollout coordination, and ensuring correct installation and deployment. For more information on Total Implementation Solutions, visit <http://www.cisco.com/warp/public/cc/serv/mkt/sup/ent/tis/>.

Technical Support Services

Cisco SMARTnet™ support augments the resources of your operations staff by providing them with access to a wealth of expertise, both on line and via telephone, including the ability to refresh their system software at will, and a range of hardware Advance Replacement options. Cisco SMARTnet Onsite support provides all services and complements the hardware Advance Replacement feature by adding the services of a field engineer, services that can be critical for those locations where staffing is insufficient or unavailable to perform parts-replacement activities. For more information on Cisco SMARTnet support, visit <http://www.cisco.com/warp/public/cc/serv/mkt/sup/ent/snet/>.

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