Cisco 2600 Series Modular Multiservice Router

Cisco Systems delivers enterprise/provider-class versatility, integration, and power to branch offices with the Cisco 2600 Series Modular Multiservice Router Family.

The widely deployed Cisco 2600 Series provides a cost-effective solution to meet today's and tomorrow's branch office needs for:

- Multiservice voice/data integration
- Virtual Private Network (VPN) access with Firewall options
- Analog and digital dial access services
- Routing with Bandwidth Management
- Inter-VLAN routing

The modular architecture of the Cisco 2600 Series allows interfaces to be upgraded to accommodate network expansion or changes in technology as new services and applications are deployed. By sharing modular interfaces with the Cisco 1600, 1700, and 3600 Series, the Cisco 2600 provides unrivaled investment protection. The Cisco 2600 Series reduces the complexity of managing the remote network solution by integrating the functions of multiple separate devices into a single, compact unit.

Driven by a powerful RISC processor along with high-performance DSPs and auxiliary processors on various interfaces, the Cisco 2600 Series supports the advanced quality of service (QoS), security, and network integration features required in today's evolving branch offices. The Cisco 2600 Series is available in three performance levels and six base configurations:

- **Cisco 2650 and Cisco 2651**— up to 37K packets per second (pps), one and two autosensing 10/100 Mbps Ethernet ports
- **Cisco 2620 and Cisco 2621**—up to 25K pps, one and two autosensing 10/100 Mbps Ethernet ports
- **Cisco 2610 through Cisco 2613**—up to 15K pps
  - **Cisco 2613**—One Token Ring port
  - **Cisco 2612**—One Ethernet port, one Token Ring port
  - **Cisco 2611**—Two Ethernet ports
  - **Cisco 2610**—One Ethernet port

Each model also has two WAN Interface Card (WIC) slots, one Network Module slot, and an Advanced Integration Module (AIM) slot. These slots share more than 50 different modules across four Cisco product lines.

Figure 1 Cisco 2600 Series Modular Access Routers

The WAN interface cards available for the Cisco 1600, 1700, 2600, and 3600 routers support a variety of serial, Integrated Services Digital Network Basic Rate Interface (ISDN BRI), and integrated channel service unit/data service unit (CSU/DSU) options for primary and backup WAN connectivity. Network modules available for the Cisco 2600 and 3600 Series support a broad range of applications, including multiservice voice/data integration, analog and ISDN dial access, and serial device concentration. The internal Data Compression Advanced Integration Module for the Cisco 2600 Series off-loads the task of performing high-speed data compression from the 2600's main CPU, allowing compressed data throughput of up to 8 Mbps while preserving external interface slots for other applications.

Key Benefits

As part of Cisco's comprehensive end-to-end networking solution, the Cisco 2600 Series allows businesses to extend a cost-effective, seamless network infrastructure to the branch office with the following benefits:

- Investment protection—Because the Cisco 2600 series supports field-upgradable modular components, customers can easily change network interfaces without a "forklift upgrade" of the entire branch office network solution. The AIM slot of the Cisco 2600 platform further protects investments by offering the expandability to support advanced services such as hardware-assisted data compression and, in the future, hardware-assisted data encryption.
- Lower cost of ownership—By integrating the functions of CSU/DSUs, ISDN Network Termination (NT1) devices, firewall, modems, compression or encryption devices, and other equipment found in branch office wiring closets in a single, compact unit, the Cisco 2600 Series provides a space-saving solution that can be managed remotely using network management applications such as CiscoWorks and CiscoView.
- Multiservice voice/data integration—Cisco offers the industry's broadest, scalable multiservice voice/data integration solution set. The Cisco 2600 Series allows network managers to reduce long-distance interoffice calling costs and enables next-generation applications such as integrated messaging and Web-based call centers. Using the Voice/Fax modules, the Cisco 2600 may be deployed in both Voice over IP (VoIP) and Voice over Frame Relay (VoFR) networks. When used with the new packet voice trunk module, a single Cisco 2600 Series can support 60 simultaneous voice calls as well as routing and other services.
- Enterprise / Provider class solution—Meets the requirements of multiservice enterprises and their managed service CPE providers with high reliability features, multiple WAN connections, and the ability to migrate from data- only to TDM voice and data to packetized voice and data infrastructure.

Key Features and Benefits

The Cisco 2600 Series brings a cost-effective combination of versatility, integration, and power to remote branch offices with the key features listed in Table 1.

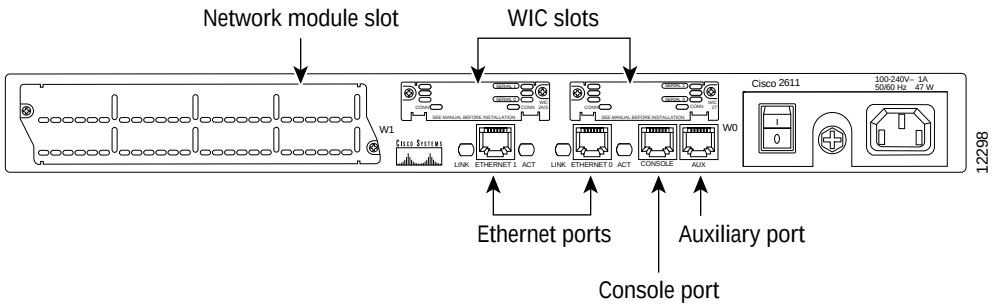
Table 1 Key Features and Benefits of the Cisco 2600 Series

Features	Benefits
Versatility and Investment Protection	
Modular Architecture	• Network interfaces are field-upgradable to accommodate future technologies while providing a solution to meet today's needs • Additional interfaces can be added on a "pay as you grow" basis to accommodate network growth • LAN and WAN interface configuration is easily customized for individual needs
WAN Interface Cards and Network Modules Shared with Cisco 1600, 1700, and 3600 Series Routers	• Reduced cost of maintaining inventory of Cisco 1600, 1700, 2600, and 3600 Series modular components • Lower training costs for support personnel
Multiflex Voice/WAN Interface Card Support	• Can be used for WAN (data-only) connectivity then re-deployed to support channelized voice and data, or packet voice applications
Advanced Integration Module Slot	• Expandability for integration of advanced high performance services such as hardware-assisted data compression or encryption
DC Power Supply Option	• Allows deployment in DC power environments such as telecommunications carrier central offices

Table 1 Key Features and Benefits of the Cisco 2600 Series (Continued)

Features	Benefits
Enterprise/Managed Service CPE-Class Performance	
High-Performance RISC Architecture	• Support for advanced QoS features such as the Resource Reservation Protocol (RSVP), Weighted Fair Queuing (WFQ), and IP Precedence to reduce recurring WAN costs • Enables security features such as data encryption, tunneling, and user authentication and authorization for VPN access • ICSA-certified Cisco IOS Firewall feature sets provide support for advanced security features such as Context-Based Access Control (CBAC), Java blocking, denial of service protection, intrusion detection, and audit trails • Support for cost-effective, software-based data compression and data encryption • Integration of legacy networks via data link switching plus (DLSW+) and Advanced Peer-to-Peer Networking (APPN) • High-speed routing performance of up to 37,000 packets per second for maximum scalability to support more concurrent functions (Cisco 2650 and Cisco 2651)
Full Cisco IOS® Software Support	• Supports the same IOS software Feature Sets as the Cisco 2500 and 3600 Series
Simplified Management	
Integrated CSU/DSU, Analog Modem and NT1 Options	• Enables remote management of all Customer Premise Equipment (CPE) elements for higher network availability and lower operational costs
Support for CiscoWorks and CiscoView	• Allows simplified management of all integrated and stackable components
Support for Cisco Voice Manager (CVM)	• Reduces the cost of deploying and managing integrated voice/data solutions
Enhanced Setup Feature	• Context-sensitive questions guide the user through the router configuration process, allowing faster deployment
Support for Cisco AutoInstall	• Configures remote routers automatically across a WAN connection to save cost of sending technical staff to the remote site
Part of Cisco's Enterprise Stackable Solutions	• Can be stacked with LAN switches such as the Catalyst® 1900 or 2820XL for simplified management
VLAN Support	• Enables inter-VLAN routing via Cisco's Inter-Switch Link (ISL) protocol and 802.1Q (Cisco 2620 and 2621 with an IOS "Plus" feature set)
Reliability	
Redundant Power Supply Option	• RPS can be shared with other network components such as the Cisco Catalyst 1900 Series to protect the network from downtime due to power failures
Dial-on-Demand Routing	• Allows automatic backup of WAN connection in case of a primary link failure
Dual Bank Flash Memory	• Backup copy of the Cisco IOS software can be stored in Flash memory
Ergonomic Design	
LED Status Indicators	• Provide at-a-glance indications for power, RPS status, network activity, and interface status
All Network Interfaces Located on Back of Unit	• Simplifies installation and cable management for maximum uptime
Easy-to-Open Chassis Design	• Allows fast and easy access for installation of memory or AIM
Multispeed Fan	• Enables quiet operation in office environments

Figure 2 Cisco 2600 Series Back Panel View (Cisco 2611 shown)



Hardware/Software Options

Cisco 2600 Series routers offer a choice of Ethernet, Token Ring, and autosensing 10/100 Ethernet LAN interfaces. In addition, each model features two WAN Interface Card (WIC) slots, one Network Module slot, and an Advanced Integration Module (AIM) slot as well as one 115.2 Kbps console port and one 115.2Kbps auxiliary asynchronous port.

Network Module Options

Network modules enable the Cisco 2600 Series to be customized to meet the needs of virtually any branch office. These modules support a broad range of applications, including multiservice voice/data integration, analog and ISDN dial access, and serial device concentration or ATM access. The Cisco 2600 Series share network modules with the higher performance Cisco 3600 Series and supports the more than 30 network modules listed in Table 2.

Table 2 Network Modules for Cisco 2600 Series, shared with the Cisco 3600 Series

Module	Description		Module	Description
Serial and ATM Network Modules (requires IOS release 11.3 (3)T or later)				
NM-4T1-ATM[1, 2]	Four-port T1 ATM with IMA network module		NM-8T1-ATM[1, 2]	Eight-port T1 ATM with IMA network module
NM-4E1-ATM[1, 2]	Four-port E1 ATM with IMA network module		NM-8E1-ATM[1, 2]	Eight-port E1 ATM with IMA network module
NM-1A-T3[1, 4]	One-Port DS3 ATM Network Module		NM-1A-E3[1, 4]	One-port E3 ATM Network Module
NM-16A	Sixteen-port high density async network module		NM-32A	Thirty-two-port high density async network module
NM-4A/S	Four-port low speed (128 Kbps max) async/sync serial network module		NM-8A/S	Eight-port low speed (128 Kbps max) async/sync serial network module
LAN/LAN to LAN Network Modules (requires IOS release 11.3 (4) T or later)				
NM-1E	One-port Ethernet network module		NM-4E	Four-port Ethernet network module
NM-1ATM-25[1]	One-port ATM 25Mbps network module		NM-2W	Two-WAN interface card slot network module (WAN interface cards offered separately)
Dial, ISDN, and Channelized Serial Network Modules (requires IOS release 11.3 (4) T or later)				
NM-1CT1	One-port channelized T1/ISDN PRI network module		NM-1CT1-CSU	One-port channelized T1/ISDN PRI with CSU network module
NM-2CT1	Two-port channelized T1/ISDN PRI network module		NM-2CT1-CSU	Two-port channelized T1/ISDN PRI with CSU network module
NM-1CE1B	One-port channelized E1/ISDN PRI balanced network module		NM-1CE1U	One-port channelized E1/ISDN PRI unbalanced network module
NM-2CE1B	Two-port channelized E1/ISDN PRI balanced network module		NM-2CE1U	Two-port channelized E1/ISDN PRI unbalanced network module

Table 2 Network Modules for Cisco 2600 Series, shared with the Cisco 3600 Series (Continued)

Module	Description		Module	Description
NM-4B-S/T	Four-port ISDN BRI network module (S/T interface)		NM-4B-U	Four-port ISDN BRI with NT-1 network module (U interface)
NM-8B-S/T	Eight-port ISDN BRI network module (S/T interface)		NM-8B-U	Eight-port ISDN BRI with NT-1 network module (U interface)
NM-8AM	Eight analog modem network module		NM-16AM	Sixteen analog modem network module
Voice/Fax Network Modules (requires IOS release 11.3 (2) or later)				
NM-HDV-1T1-12[1, 2]	Twelve-channel T1 high density voice/fax network module		NM-HDV-1E1-12[1, 3]	Twelve-channel E1 high density voice/fax network module
NM-HDV-1T1-24[1, 2]	Twenty-four-channel T1 high density voice/fax network module		NM-HDV-1E1-30[1, 3]	Thirty-channel E1 high density voice/fax network module
NM-HDV-1T1-24E[1, 2]	Twenty-four-channel T1 enhanced high density voice/fax network module		NM-HDV-1E1-30E[1, 3]	Thirty-channel enhanced E1 high density voice/fax network module
NM-HDV-2T1-48[1, 2]	Forty-eight-channel T1 high density voice/fax network module		NM-HDV-2E1-60[1, 3]	Sixty-channel E1 high density voice/fax network module
NM-HDV=[1, 2]	High-density voice module, spare (no T1 or DSPs)		NM-1V[1]	One-slot voice/fax network module
NM-2V[1]	Two-slot voice/fax network module			

1. The voice/fax and ATM network modules require a Cisco IOS Plus feature set.
2. Requires Cisco IOS Version 12.05XK or later.
3. Requires Cisco IOS Version 12.07XK or later.
4. Requires Cisco IOS Version 12.1.2T or later.

Table 3 Voice Interface Cards for use with the Voice/Fax Network Modules

Module	Description
VIC-2BRI-S/T-TE[1]	Two-port BRI S/T terminal equipment voice/fax interface card for voice/fax network module
VIC-2FXS	Two-port FXS voice/fax interface card for voice/fax network module
VIC-2FXO-M1[2]	Two-port FXO voice/fax interface card for voice/fax network module with Caller ID and supervisory disconnect (North American version and other countries)
VIC-2FXO	Two-port FXO voice/fax interface card for voice/fax network module (North American version and other countries)
VIC-2FXO-M2[2]	Two-port FXO voice/fax interface card with Caller ID and supervisory disconnect (Europe version)
VIC-2FXO-EU	Two-port FXO voice/fax interface card (Europe version)
VIC-2FXO-M3	Two-port FXO voice/fax interface card for Australia
VIC-2E/M	Two-port E&M voice/fax interface card for voice/fax network module

1. Supported with Cisco IOS 12.0(3)T or later
2. Supported with Cisco IOS 12.1(2)XH or later

Also see the new Multiflex Voice/WAN Interface Cards (VWICs) in Table 4.

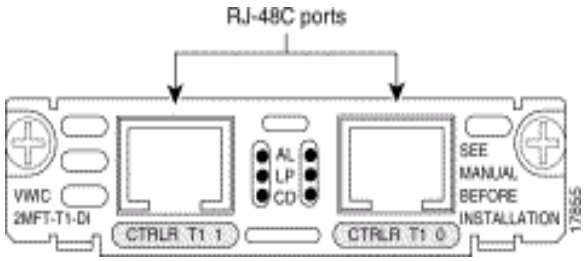
Multiflex Voice/WAN Interface Card and WAN Interface Card Options

The Cisco 2600 Series WAN interface card slots supports 15 interface cards available for the Cisco 1600, 1700 and 3600 Series, including the new single and dual port Multiflex Voice/WAN Interface Cards and dual port serial WAN interface cards (WICs) to maximize interface density and slot efficiency.

The new single and dual port Multiflex VWICs combine WAN Interface Card (WIC) and Voice Interface Card (VIC) functionality to provide unparalleled flexibility, versatility, and investment protection from its many uses. Supporting up to T1 and E1 rates with integrated T1 CSU/DSUs or E1 DSUs, the Multiflex VWICs can be used in data-only, channelized (drop and insert) voice/data integration applications as well as packet voice/data connections to a PBX or the PSTN (packet voice requires the use of the high density voice trunk network module).

Unlike Old World multibox voice and data components, when used in a Cisco 2600 or 3600, the T1/E1 Multiflex Voice/WAN interface cards deliver a single-box voice and data platform providing a graceful migration from data only, to channelized voice and data, to packet voice and data.

Figure 3 Dual-Port Multiflex T1 VWIC with Drop & Insert



The dual-port serial WAN interface cards feature Cisco's new, compact, high-density Smart Serial connector to support a wide variety of electrical interfaces when used with the appropriate transition cables. Ports on each card can be configured individually to support a variety of synchronous or asynchronous protocols.

Figure 4 Dual-Port High-Speed Serial WIC (up to 8 Mbps/card)

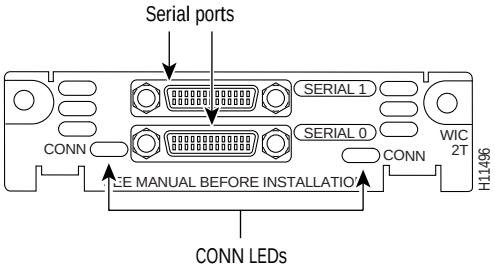
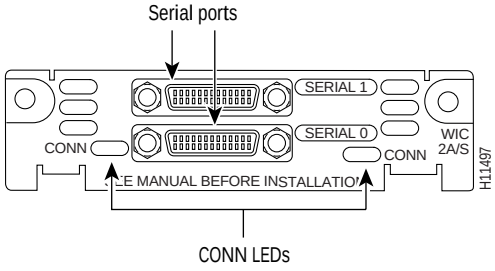


Figure 5 Dual-Port Async/Sync Serial WIC (up to 128 Kbps/port)



With two WAN Interface Card slots per chassis, the Cisco 2600 Series supports the WAN Interface Cards in Table 4.

Table 4 Multiflex Voice/WAN and WAN Interface Cards for Cisco 2600 Series

Module	Description
VWIC-1MFT-T1[1]	One-port T1/Fractional T1 Multiflex Trunk with CSU/DSU
VWIC-2MFT-T1[1]	Dual-port T1/Fractional T1 Multiflex Trunk with CSU/DSU
VWIC-2MFT-T1-DI[1]	Dual-port T1/Fractional T1 Multiflex Trunk with CSU/DSU and Drop & Insert
VWIC-1MFT-E1[1]	One-port E1/Fractional E1 Multiflex Trunk with DSU
VWIC-2MFT-E1[1]	Dual-port E1/Fractional E1 Multiflex Trunk with DSU
VWIC-2MFT-E1-DI[1]	Dual-port E1/Fractional E1 Multiflex Trunk with DSU and Drop & Insert
VWIC-1MFT-G703[2]	One-port G.703 Multiflex Trunk
VWIC-2MFT-G703[2]	Dual-port G.703 Multiflex Trunk
WIC-1DSU-T1	T1/Fractional T1 CSU/DSU (requires Cisco IOS Version 11.3 [4] T or later)
WIC-1DSU-56K4	One-port four-wire 56/64 Kbps CSU/DSU
WIC-1T	One-port high speed serial
WIC-2T	Dual-port high speed serial
WIC-2A/S	Dual-port async/sync serial
WIC-1B-S/T	One-port ISDN BRI
WIC-1B-U	One-port ISDN BRI with NT1

1. Requires Cisco IOS 12.0(5)XK or later.
2. Requires Cisco IOS 12.1(1)T or later.

Advanced Integration Module Options

The Data Compression AIM is the first product to take advantage of the Cisco 2600's internal Advanced Integration Module slot, ensuring that external slots remain available for components such as integrated CSU/DSUs, analog modems, or Voice/Fax Network Modules. The Data Compression AIM for the Cisco 2600 Series delivers a cost-effective option for reducing recurring WAN costs and maximizing the benefit of the advanced bandwidth management features of the Cisco IOS software.

The Data Encryption AIM offers optional hardware-based encryption services by offloading the encryption processing from the Cisco 2600 series Central Processing Unit (CPU), providing 10-times the performance over software-only encryption.

Table 5 Advanced Integration Module for the Cisco 2600 Series

Module	Description
AIM-COMPR2	Data Compression AIM for the Cisco 2600 Series (requires IOS software release 12.02T or later)
AIM-COMPR2	Data Encryption AIM for the Cisco 2600 series (requires IOS software release 12.1(3)XI or later)

Cisco IOS Software

Modeled after the Cisco 2500 and Cisco 3600, the Cisco 2600 Series supports a full range of Cisco IOS features. With 20 different feature sets, a wide variety of intranet, multiprotocol, QoS, and legacy IBM applications in use today are supported. The Cisco 2600 Series offers four base protocol feature sets and a combination of premium feature options including the Plus, encryption, and firewall feature sets.

The base feature sets are:
- IP
- IP/IPX/AppleTalk/DEC
- Enterprise
- Enterprise SNA Switch (formerly APPN)

The Base feature sets support popular protocols and standards such as NAT, OSPF, Border Gateway Protocol (BGP), Remote Access Dial-In User Service (RADIUS), IP Multicast, RMON, and WAN optimization features (such as Bandwidth on Demand; Custom, Priority and Weighted Fair Queuing, Dial Back-up, and RSVP).

The following Premium features are offered in combination with the above base feature sets:
- Plus
- Plus with IPSec Encryption (56-bit and 168-bit with 3DES)
- Firewall
- Plus Firewall
- Plus with Encryption and Firewall

The Plus feature sets contain an additional number of value-added features such as legacy mainframe protocols, DLSw, L2TP, L2F, Voice/Data integration, Asynchronous Transfer Mode (ATM), VLANs, Netflow, etc. Additional feature sets include IPSec, and 3DES encryption as well as ICSA certified Firewall capabilities with intrusion detection.

The Remote Access Services feature set includes various management, multicast, security (excluding encryption), protocol translation, remote node and terminal services and some LAN and WAN service and optimization protocols but excludes some of the above base feature set standards.

The Cisco 2600 also supports the Cisco IOS IP/H.323 Gatekeeper feature set providing the H.323 industry standard gatekeeper functionality needed for scalable multiservice networks. As a H.323 gatekeeper, the Cisco 2600 is dedicated to supporting video conferencing call-setup, proxy, directory maintenance among other responsibilities; it does not support multi-protocol routing.

A more detailed list of features can be found in the Cisco 2600 IOS release notes. The memory requirements for a given feature set can be found in the Cisco 2600 software features and memory requirements product bulletin. Note: Effective March 2000, all Cisco 2600 Series modular access routers ship with 32 MB of DRAM memory and 8 MB of Flash memory as the default configuration. Some Cisco IOS feature sets require additional memory.

Technical Specifications

The Cisco 2600 Series provides unparalleled flexibility and port density options for branch offices. The following table highlights a few of the Cisco 2600 configuration possibilities:

Table 6 Maximum Cisco 2600 Port Densities

Application	Max. # Supported
Simultaneous Voice Calls (digital/analog)	60/4
T1/E1 Connections (including ATM)	8
Integrated Modems	16
ISDN PRI (B channels)	64
ISDN BRI	10
Asynchronous Serial	37
Synchronous Serial	12

- Main Processor: 80 MHz RISC (Cisco 265x); 50 MHz RISC (Cisco 262x); 40 MHz RISC (Cisco 261x)
- Flash Memory: 8 to 16MB (Cisco 261x and Cisco 262x); 8 to 32MB (Cisco 265x only)
- System Memory (DRAM): 32 to 64MB (Cisco 261x and Cisco 262x); 32 to 128MB (Cisco 265x only, uses SDRAM)
- WAN Interface Card Slots: 2
- Network Module Slot: 1
- AIM Slot: 1
- Console/Aux Speed: 115.2 Kbps (maximum)
- Width: 17.5 in. (44.5 cm)
- Height: 1.69 in. (4.3 cm)
- Depth: 11.8 in. (30 cm)
- Weight (min): 8.85 lb (4.02 kg)
- Weight (max): 10.25 lb (4.66 kg)
- Power Dissipation: 72W (maximum)
- AC Input Voltage: 100 to 240 VAC
- Frequency: 47 to 64 Hz
- AC Input Current: 1.5 amps
- DC Input Voltage: -38V to -60V (UL label)
- DC Input Current: 2 amps
- Operating Temperature: 32 to 104 F (0 to 40 C)
- Non-operating Temperature: -13 to 158 F (-25 to 70 C)
- Relative Humidity: 5 to 95% non-condensing
- Noise Level (min): 38-dbA
- Noise Level (max): 42-dbA

The Cisco 2600 Series conforms to a number of safety, EMI, immunity, and network homologation standards. Details can be obtained through your Cisco reseller or account manager.

Cisco Service and Support

Leading-edge technology deserves leading-edge support. Service and support for the Cisco 2600 Series is available on a one-time or annual contract basis. Support options range from help desk assistance to proactive, onsite consultation. All support contracts include:

- Major Cisco IOS software updates in protocol, security, bandwidth, and feature improvements
- Full access rights to Cisco Connection Online for technical assistance, electronic commerce, and product information
- 24-hour-a-day access to the industry's largest dedicated technical support staff

A support contract maximizes the value of your technology investment throughout its lifecycle, ensuring optimum performance and availability. Augment your internal staff's capabilities by leveraging Cisco's expertise. Contact your local sales office for further information.

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 Europe
11, Rue Camille Desmoulins
92782 Issy-les-Moulineaux
Cedex 9
France
www.cisco.com
Tel: 33 1 58 04 60 00
Fax: 33 1 58 04 61 00

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 Australia, Pty., Ltd
Level 17, 99 Walker Street
North Sydney
NSW 2059 Australia
www.cisco.com
Tel: +61 2 8448 7100
Fax: +61 2 9957 4350

Cisco Systems has more than 200 offices in the following countries and regions. Addresses, phone numbers, and fax numbers are listed on the Cisco.com Web site at www.cisco.com/go/offices.

Argentina • Australia • Austria • Belgium • Brazil • Bulgaria • Canada • Chile • China PRC • Colombia • Costa Rica • Croatia • Czech Republic • Denmark • Dubai, UAE Finland • France • Germany • Greece • Hong Kong SAR • Hungary • India • Indonesia • Ireland • Israel • Italy • Japan • Korea • Luxembourg • Malaysia • Mexico • The Netherlands • New Zealand • Norway • Peru • Philippines • Poland • Portugal • Puerto Rico • Romania • Russia • Saudi Arabia • Scotland • Singapore • Slovakia Slovenia • South Africa • Spain • Sweden • Switzerland • Taiwan • Thailand • Turkey • Ukraine • United Kingdom • United States • Venezuela • Vietnam •

12/00 BW6897