Introduction

Register Your Cisco Product Quick Reference Guide (CPQRG)

Register to receive notification when CPQRG December 2004 is updated, pre-order availability for future editions and updates to the registration site. Also receive access to searchable Adobe PDFs and HTML versions of the CPQRG December 2004 edition. Go to **http://www.cisco.com/go/guide** and register using code:

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78-5983-13-MLL-0310
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CPQRG Background

The Cisco Product Quick Reference Guide (CPQRG) is a handy, compact reference tool that includes brief product overviews, key features, sample part numbers, and abbreviated technical specifications for many of Cisco's products. The CPQRG is primarily published to support Cisco partners, resellers, sales account teams, and even end-user customers who need a broad, high-level overview of Cisco products, but at that moment do not have access to Cisco's Web site, Cisco.com at **http://www.cisco.com**.

Because this book is only published twice per year, there are likely to be new products, configurations, and part numbers not included in this edition. For the most up-to-date and comprehensive information about Cisco products and solutions, please refer to our on-line information or consult a Cisco representative.

Additional Information

Additional printed copies of this book can be purchased on an as-needed basis. For questions, comments, and to register a copy of the CPQRG, visit **http://www.cisco.com/go/guide**.

How to Get More Complete Product Information

Cisco Product Web Site	For more comprehensive information on all of Cisco's products, please refer to the Cisco Product Web Site at: http://www.cisco.com/en/US/products/index.html
Cisco.com	For even more complete product and solution information, please go to Cisco.com at http://www.cisco.com.
	In addition to product, technology, and network solutions support, Cisco.com provides a wealth of information including how to find an authorized representative or partner, how to order products, technical support/customer service, Cisco Corporate news and information, and links to training/events/seminars.
Cisco Technical Documentation	http://www.cisco.com/univercd/home/home.htm

Cisco Systems Overview

Cisco Systems, Inc. is the worldwide leader in networking for the Internet. Today, networks are an essential part of business, education, government and home communications, and Cisco Internet Protocol-based (IP) networking solutions are the foundation of these networks. Cisco hardware, software, and service offerings are used to create Internet solutions that allow individuals, companies, and countries to increase productivity, improve customer satisfaction and strengthen competitive advantage. The Cisco name has become synonymous with the Internet, as well as with the productivity improvements that Internet business solutions provide. At Cisco, our vision is to change the way people work, live, play and learn.

Cisco was founded in 1984 by a small group of computer scientists from Stanford University. Since the company's inception, Cisco engineers have been leaders in the development of Internet Protocol (IP)-based networking technologies. This tradition of IP innovation continues with industry-leading products in the core areas of routing and switching, as well as advanced technologies.

Today, with more than 34,000 employees worldwide, Cisco remains committed to creating networks that are smarter, thanks to built-in intelligent network services; faster, in their ability to perform at ever-increasing speeds; and more durable, with a generational approach to an evolutionary infrastructure.

Partner and Customer Support

Partner Sales and Technical Assistance Contact Information

Customer Help Lines	Contact Information
Presales—Partner/Reseller Helpline	800 553-6387 (within U.S.)
	408 526-7208 (outside U.S.)
	http://CiscoPartner.custhelp.com/
Post-Sales—Technical Assistance Center (TAC)	800 553-2447 (within U.S.)
	408 526-7209 (outside U.S.)
	tac@cisco.com (e-mail)

Cisco Authorized Refurbished Equipment (Select Countries Only)

Customers looking for used Cisco equipment can now be assured of the quality and support they come to expect from new Cisco products, through the Cisco Authorized Refurbished Equipment program. Cisco Authorized Refurbished Equipment gives customers a price competitive alternative to buying uncertified and unlicensed products off the secondary market. All equipment sold through this program is labeled "Refurbished by Cisco Systems," indicating that the product is Cisco tested, refurbished, authorized, and supported.   The program is limited to certain countries, so interested customers should check with their local Cisco account manager of Cisco authorized reseller for availability.

For More Information

End Users/Customers:
cisco.com/en/US/ordering/or6/or17/order_refurbished_equipment_program_description.html
Resellers: **http://www.cisco.com/go/refurb** (click on "Refurbished Products")

Cisco Systems Capital Financing

Cisco Systems Capital® Corporation—a wholly owned subsidiary of Cisco Systems, Inc.—specializes in financing networks by providing innovative, flexible financial solutions on a global basis. The Cisco Systems Capital lease platforms enable partners to acquire Cisco networking solutions quickly and easily while maximizing their capital expenditure budgets. In addition to protecting customers from technology obsolescence, leasing solutions give customers the flexibility to distribute the acquisition cost of the solution over time thereby better matching the expense to the benefits gained from deploying the latest and greatest technology from Cisco. Cisco Systems Capital works closely with Cisco account managers, resellers, and channel partners to deliver worlclass financing solutions designed specifically to match Cisco's leading edge technology solutions.

For More Information

See the Cisco Systems Capital Web site: **http://www.cisco.com/go/CiscoCapital**
Within the United States, call 800 730-4090.

Cisco Channel Partner Program

The award-winning Cisco Channel Partner Program is your connection to a wealth of resources all aimed at increasing your profitability and customer satisfaction. Whether you provide products, services, or solutions, partnering with Cisco pays off. You gain higher credibility, a new level of differentiation, increased competency, greater visibility, and a stronger relationship with Cisco and your customers.

Relationship Types

- Cisco Registered Partner—The first step in establishing your relationship with Cisco and provides you with access to the tools and training you need to become a Cisco certified or specialized partner
- Cisco Specialized Partner—Developing expertise in a selected area of focus can help differentiate businesses from competitors, pursue new markets, and migrate to higher margin-based services and solution-based business models. There are both technology and services specializations, in areas ranging from Converged Business, CRM Express, IP Communications to Wireless LANs
- Cisco Certified Partner—This program integrates the technology focus of Cisco channel specializations, flexible individual career certification requirements, customer satisfaction tools, and pre- and post-sales support capabilities

Certification Levels

- Cisco Gold Certified Partner—offers the highest credibility in the marketplace. Cisco Gold Certified Partners deliver the highest level of support, have achieved a measurable level of customer satisfaction, and are recognized for gaining expertise in three specializations, typically
- Cisco Silver Certified Partner—gives your company enhanced credibility, provides objective evidence of your superior service and support capabilities, and rewards you with recognition for focusing on at least two specializations
- Cisco Premier Certified Partner—offers your company credibility and access to Cisco programs as well as recognition for focusing on at least one specialization

Rewards

Depending on the level of competencies and capabilities, rewards available to your company include Access to the Cisco Brand, Communications, Discounts and Promotions, Free and/or Discounted Training, and Channel Incentive Programs.

For More Information

See the Cisco Channel Partner Program web site at **http://www.cisco.com/go/partner**

Product Warranty Information

All Cisco hardware and software products are covered for a minimum of 90 days. Some products have a longer or more appropriate coverage. All Cisco warranties apply to the Customer or Original Owner (the individual who purchased the product for their own use) also referred to as the End User.

Warranty[1]	Entitlements Description
Cisco Standard 90-day Hardware Warranty, Software Warranty and License Agreement (78-5235-vvrr)	• Advance Replacement shipping within 10 business days from RMA Request Date within 90 Days of original shipment from Cisco or from Cisco Reseller • 90-Day Assurance that the SW Media is defect-free and the SW conforms to its published specifications • Guest Access to Cisco Connection Online (CCO)
90-Day Limited Hardware Warranty(78-5236-vvrr)	• Advance Replacement shipping within 10 business days from RMA Request Date within 90 Days of original shipment from Cisco or from Cisco Reseller • 90-Day Assurance that the SW Media is defect-free and the SW conforms to its published specifications • Guest Access to Cisco Connection Online (CCO)
One-Year Limited Hardware Warranty (78-10747-vvrr)	• Advance Replacement shipping within 10 business days from RMA Request Date within One Year of original shipment from Cisco or from Cisco Reseller • 90-Day Assurance that the SW Media is defect-free and the SW conforms to its published specifications • Guest Access to Cisco Connection Online (CCO)
Limited Lifetime Hardware Warranty (78-6310-vvrr)	• Advance Replacement shipping within 10 business days from RMA Request Date during supported life of the product, starting original ship date from Cisco or Cisco reseller. (Fan and power supply warranty limited to 5 years from ship-date) • 90-Day Assurance that the SW Media is defect-free and the SW conforms to its published specifications • Guest Access to Cisco Connection Online (CCO)
End-User Software License Agreement and Software Warranty (78-3621-vvrr)	• 90-Day Assurance that the SW Media is defect-free and the SW conforms to its published specifications • End User License Agreement terms • Guest Access to Cisco Connection Online (CCO)
5-Years Limited Hardware and 1-Year Limited Software Warranty (78-13712-vvrr)	• Replacement shipping within 15 business days from RTF Date within 5 Years from the original ship date from Cisco or Cisco reseller • One-Year Assurance that the SW Media is defect-free and the SW conforms to its published specifications • Guest Access to Cisco Connection Online (CCO)
5-Years Limited Hardware and 5-Year Limited Software Warranty[2] (78-13712-vvrr)	• Replacement shipping within 15 business days from RTF Date within 5 Years from the original ship date from Cisco or Cisco reseller • Five-Year Assurance that the SW Media is defect-free and the SW conforms to its published specifications • Guest Access to Cisco Connection Online (CCO)

1. "vv" and "rr" suffixes of the warranty document numbers represent the revision and version numbers respectively.

2. The Cisco Limited 5-Year Hardware and 5-Year Software Warranty is available only to qualified World Wide Service Providers which Cisco defines as owners and operators of the world's collection of voice-oriented Public Switched Telephone Networks (PSTNs)

For More Information

See the Web site: **http://www.cisco.com/en/US/products/prod_warranties_listing.html**

Cisco Services

Cisco Services creates value for Cisco customers by delivering lifecycle services that provide lower total cost of ownership, business agility, and higher availability.

Businesses have expanded their networks not only in size but also in business utility and strategic value. As network relevance and complexity increases, network support becomes more important. Cisco Services broadens the traditional support portfolio by adding architectural and optimization services and providing full support throughout the network lifecycle. This support helps customers prepare, plan, design, implement, operate, and ultimately optimize their networks.

Support throughout the network lifecycle helps enable delivery of end-to-end, targeted solutions that are essential for companies to receive the full benefit that a converged network can provide. Cisco transfers knowledge at every phase of the lifecycle, helping IT staffs learn the skills they need to run next-generation converged networks. Adopting the entire lifecycle approach helps to ensure that networks now and in the future provides the most value, with less downtime, better security, and with the ability to quickly add new technologies.

Cisco and its partners have deployed some of the largest and most complex systems in the world. Based on this experience, Cisco has defined the necessary lifecycle services required for various customer and technology requirements, delivering tailored services based on specific needs.

Delivered directly by Cisco and through best-in-class service partners, Cisco Services maximize business productivity by providing a lower total cost of ownership, business agility, and higher availability. The Cisco Services lifecycle framework delivers solutions to meet customers' current needs and to support migration to the intelligent information network of the future.

For More Information

See the Technical Support Services Web site:
http://www.cisco.com/en/US/products/svcs/ps3034/serv_category_home.html

Helpful Cisco Web Sites

Cisco Web Site	URL[1]
Worldwide Contacts	http://www.cisco.com/go/wwcontacts
Technical Support	http://www.cisco.com/go/support
	For customer support tips, software center, online documents, and more.
Learning & Events	http://www.cisco.com/en/US/learning/
	http://www.cisco.com/warp/public/10/wwtraining/pec/peclogin.html
Partner Events	http://www.cisco.com/en/US/partners/pr47/events.shtml
Partner Registration	http://tools.cisco.com/WWChannels/IPA/welcome.do
	Begin your relationship with Cisco by registering as a Cisco Registered or Certified Partner
Marketing Resources	http://www.cisco.com/en/US/partners/pr61/marketing.shtml
Sales Resources	http://www.cisco.com/en/US/partners/pr61/partners_marketing_category_home.shtml
Channel Partner Program	http://www.cisco.com/en/US/partners/pr11/index.shtml
Get Cisco.com Access	http://tools.cisco.com/RPF/register/register.do
	Register for a guest-level Cisco.com ID as a prerequisite for partner level access
Associate Myself With A Partner	http://tools.cisco.com/WWChannels/GETLOG/jsp/GetLogin.jsp?page=PartnerUserHomePage
	If you are an employee of Cisco Registered and Cisco Certified or Specialized Partners, you can associate yourself with your company and upgrade your current Cisco.com ID to partner level
Partner Self Service	http://tools.cisco.com/WWChannels/GETLOG/welcome.do
	Use this suite of tools to manage personal and company information in the Cisco partner database
Partner Help Online	http://ciscopartner.custhelp.com/
	Search partners' frequently asked questions and ask for the help you need
Partner Incentives and Promotions	http://www.cisco.com/en/US/partners/pr61/pr73/partners_promotions_concept_home.shtml
Cisco Partner Newsletters	http://www.cisco.com/en/US/partners/pr47/newsletter/index.shtml
Channel Partner Tools	http://www.cisco.com/en/US/partners/partners_channels_tools_index.shtml
Partner News@Cisco	http://www.cisco.com/en/US/partners/pr47/partners_whats_new.shtml
Certification/Specialization Application	http://tools.cisco.com/WWChannels/cpapp/index.jsp
	Apply for a Cisco Certification or Specialization
Cisco Product Quick Reference Guide	http://cisco.com/go/guide
	Register your copy of CPQRG and order additional copies
Product Catalog	http://cisco.com/univercd/cc/td/doc/pcat/
Find a Channel Account Manager	http://tools.cisco.com/WWChannels/CAMLOC/jsp/cam_locator.jsp
Partner Business Central—	http://tools.cisco.com/appcontent/echannels/pbc/
Browse and Configure Products	Contains a configuration tool to validate channel product options; also select and compare products, check price and availability, and submit your order to your distributor online. Cisco.com login required—click on "Browse and Configure Products".
Worldwide Distributors Web Site	http://tools.cisco.com/WWChannels/LOCATR/jsp/distributor_locator.jsp
	List, by country, of authorized Cisco Distributors who stock and resell Cisco products.
Distribution Product Reference Guide (DPRG)	http://tools.cisco.com/appcontent/echannels/pbc/
	Complete list of pricing information, part numbers, and more for distribution (2-tier) products. Data is refreshed nightly. Cisco.com login required.
End-of-Sale and End-of-Life Products	http://www.cisco.com/en/US/products/prod_end_of_life.html
Cisco Product Advisor	http://www.cisco.com/warp/public/779/smbiz/service/advisor/
Discussion Forums	http://forums.cisco.com/eforum/servlet/NetProf?page=main
Cisco Partner View	http://www.cisco.com/en/US/partners/home_pages_cisco_partner_view_tool_launch.shtml
	Cisco Partner View is a single entry point to access the applications and content required by Cisco certified partners to effectively manage their Cisco relationship.
Cisco Power Calculator	http://tools.cisco.com/cpc/launch.jsp
	Calculate the power supply requirements for Cisco Catalyst® 6500, Catalyst 4500, Catalyst 3750, and Catalyst 3560 series switches, and the Cisco 7600 Series Router.
Cisco Feature Navigator II	http://tools.cisco.com/ITDIT/CFN/jsp/index.jsp
Command Lookup Tool for Cisco IOS	http://www.cisco.com/pcgi-bin/Support/Cmdlookup/home.pl
Product Alert Tool	http://www.cisco.com/Support/PAT/do/ViewMyProfiles.do
Service Availability Matrix	http://tools.cisco.com/apidc/sam/search/search.do
Small Business Network Designer	http://www.ciscoretail.com/sbnd/index.html
Software Advisor	http://tools.cisco.com/Support/Fusion/index.do
Cisco IOS Software Selector	http://tools.cisco.com/ITDIT/ISTMAIN/servlet/index
Solution Finder for Modular Routers	http://www.cisco.com/pcgi-bin/finder/msbsearch.pl
Cisco 1700 Series Router Solution Design Tool	http://www.ciscowebtools.com/1700sdt/
	Designed to guide you through the configuration of a complete Cisco 1700 Series system.
2600/3600/3700 Memory Calculator	http://www.cisco.com/pcgi-bin/Support/MemCalc/mem-calc.pl
Developer Services FAQs Central	http://www.cisco.com/pcgi-bin/front.x/cse/DSFC/DSFCGuestLogin.pl
Developer Support Central Supported Products	http://www.cisco.com/pcgi-bin/dev_support/access_level/product_support

1. Additional Cisco.com access required for most URLs.

C H A P T E R **1**

Routing

Routing at a Glance

Product	Features	Page
Cisco IOS® Software	See the Chapter 9—Cisco IOS Software and Network Management for an overview of Cisco IOS Software	9-3
Cisco SOHO Series Secure Broadband Routers	Ethernet, ADSL, ADSL over ISDN, and G.SHDSL Routers for Small Office and Home Offices • Integrated security of Cisco IOS Software with Stateful Inspection Firewall and software-based 3DES encryption • Easy setup and deployment using Cisco Router Web Set Up Tool (CRWS) • Offers many local and remote debug and troubleshooting features in Cisco IOS Software	1-8
Cisco 800 Series	• WAN: 1-port Ethernet, 1-port ADSL, ADSL over ISDN or G.SHDSL or 1-port BRI (optional NT1), or 1-port serial • LAN: 4-port Ethernet hub or 10/100 switch on most models and 2 analog telephone ports on ISDN models and 4 analog voice FXS ports on 827-4V • Advanced security features including stateful inspection firewall and hardware assisted encryption (830 series) and QoS features for VoIP • DMZ, Dial back up and out-of-band management (Cisco 830 series) • Security Device manager (SDM) GUI tool for simple and advanced configuration	1-9
Cisco 1800 Series	• Features secure, fast, and high-quality delivery of multiple, concurrent services for small-to-medium-sized businesses and small enterprise branch offices. • Supports concurrent deployment of high-performance, secure data services with headroom for future applications • Modular architecture—Offers wide variety of LAN and WAN options; network interfaces are field-upgradeable to accommodate future technologies	1-11
Cisco 1700 Series	Flexible, secure, modular access routers • 1-port autosensing 10/100 Fast Ethernet LAN • Modular slots support a wide variety of WAN and voice interface cards • Supports secure Internet, intranet, and extranet access as well as new WAN applications including VPNs, integrated voice/data (VoIP), and broadband services • VLAN Capability • Supports up to five Ethernet connections with 1FE and 1 4-port Ethernet Switch WIC (WIC-4ESW)	1-14
Cisco 2800 Series	• MIPS CPUs for increased performance • FIO ASIC-A custom designed ASIC—acts as a non-blocking switch for multiple busses • Enhanced memory bus using Double data Rate (DDR) SDRAM with Error Correcting Code • Built in hardware encryption chip accelerating IPSEC traffic • A minimum of 2 built in Fast Ethernet (FE) LAN interfaces	1-18
Cisco 2600 Series	Modular multiservice router • Single or dual LAN (10/100 Mbps Ethernet and Token Ring/Ethernet options) • Wide variety of interface support, including integrated 16-port switching, high-density analog and digital, voice, Cisco IOS Firewall and VPN, Content, async and sync serial, ISDN, Fractional and channelized T1/E1, Ethernet, analog modems, ADSL, G.SHDSL, switching integration, and ATM support • Shares WAN interface cards and network modules with Cisco 1700, 3600 and 3700 series • Optional AC, DC or RPS versions	1-24
Cisco 3800 Series	Integrated Services Routers • Highest performance and densities with the ability to run concurrent data, security, voice, and advanced services at wire speed up to T3/E3 • Higher availability and resiliency with Online Insertion and Removal (OIR); redundant system and inline power options • High-speed WAN Interface Cards (HWICs) free up network module slots for other services • Enhanced security • Expanded default and maximum memory capacity with ECC (Error Correction Code) DDR SDRAM memory to detect and correct SDRAM errors without user intervention	1-29

Product	Features	Page
Cisco 3700 Series	Modular multiservice high-density access router • Enable higher levels of application and service integration in enterprise branch offices in a small form factor • Wide variety of interface support, high-density analog and digital, voice, Cisco IOS Firewall/IDS and VPN, Fractional and channelized T1/E1, T3/E3, DS3, E3 and OC-3 ATM, Ethernet, Gigabit Ethernet and DSL. • Shares WAN interface cards (WICs), Voice Interface Cards (VICs), and Network Modules with Cisco 1700, 2600/2600XM, and 3600 series	1-32
Cisco 7200 Series	WAN-edge router providing intelligent services, modularity, high performance, investment protection, and scalability in a small form factor • Modular 3 RU Chassis • 4- or 6-slot models and choice of system processors for up to 1 Mpps performance • Wide variety of LAN and WAN options, including Ethernet, Fast Ethernet, Gigabit Ethernet, Token Ring, FDDI, serial, ISDN, HSSI, ATM, Packet over SONET, DPT/RPR	1-36
Cisco 7300 Series	Network Edge router with high performance IP services delivered at optical speeds for service providers and enterprise networks • Compact and modular 4 rack unit chassis—4 slots • High performance connectivity—T3 through OC48/STM16 with 3.5 Mpps performance • Built-in Gigabit Ethernet connectivity • Multiprotocol routing: IP, IPX, AppleTalk, DLSw • Compact size, high availability and optimal cooling	1-38
Cisco 7500 Series	High-end services-enabled core and WAN aggregation router for enterprise and service provider applications • 5-, 7-, and 13-slot models • 1-, 2-, or 4-bus models offering 1, 2, or 4 Gbps backplanes • Wide variety of LAN and WAN options including Ethernet, Fast Ethernet, Gigabit Ethernet, Token Ring, FDDI, serial, HSSI, ATM, and Packet over SONET	1-40
Cisco 7600 Series	• Consolidated WAN/MAN/LAN in a single platform • Scalable backplane bandwidth from 32 Gbps to 720 Gbps and performance from 30 Mpps to over 400Mpps with new Sup720 engine and distributed forwarding line cards • High-volume aggregation of service-enabled Ethernet • Wide range of WAN/MAN interfaces from NxDS0, T1, T3 to OC-48 with line rate services • Ideal for service provider edge, metropolitan area network, & triple-play deployments, and high-end enterprise solutions • Also supports Catalyst 6500 series line cards and 75/7200 port adapters	1-43
Cisco 10000 Series	Service provider-class edge services router • Enables service providers to deploy revenue-generating services without worrying about performance degradation • Minimizes costly network outages and maximizing end-customer satisfaction with its carrier-class high availability • Enables leased line and broadband aggregation features on a single platform • Broad range of channelized, clear channel, ATM and LAN interfaces. Physical interface speeds from E1/T1 up to OC-48c/STM-16c	1-45
Cisco 10700 Series	Service provider-class metro edge services router • Optimized building block for the next generation metro Ethernet/IP access networks • Equipped with either (24) 10/100 or 4 GbE and 8 FE ports for customer access and OC-48c/STM-16c dynamic packet transport/resilient packet ring (DPT/RPR) technology or Packet Over SONET (POS) for metro optical connectivity • Powered by Cisco IOS 12.0S software and the parallel express forwarding (PXF) architecture • Cost-effective, reliable, high-performance platform supporting full suite of IP/MPLS features and services found in Cisco Internet Routers • With DPT/RPR architecture, enables optimal fiber connectivity as well as features such as IP class of service, VoIP, L2 VPN (EoMPLS and L2TPv3) and L3 VPN (MPLS) services	1-47
Cisco 12000 Series	• Seven chassis options • Supports backbone—or edge-optimized line cards in the same chassis, maximize the value of line-rate edge applications with 10G uplinks, and sustained line-rate performance as they scale to maximum capacity • Extensive portfolio of line cards	1-49

Cisco Routers Port Matrix

	SOHO Series	800 Series	1700 Series	1800 Serieis	2600 Series	2800 Series	3700 Series	3800 Series	7100 Series	7200 Series	7300 Series	7500 Series	7600 Series	10000 Series	10720 Series	12000 Series
Fixed Ports Only	X	X	X													
Fixed & Modular Ports			X	X	X		X	X	X	X	X		X			
Modular Ports Only										X		X		X	X	X
LAN Ports																
10-MB Ethernet	X	X	X	X	X				X	X		X	X		X	
10-MB Ethernet (fiber)									X	X		X	X			
100-MB Ethernet	X	X	X	X	X		X	X	X	X		X	X		X	X
100-MB Ethernet (fiber)							X	X	X	X	X	X	X	X	X	X
10/100-MB Ethernet	X	X	X	X	X		X	X	X	X	X		X		X	
10/100 MB Switch Port	X	X	X	X									X			
Token Ring					X		X	X				X				
FDDI/CDDI												X				
ATM					X		X	X		X	X	X	X	X		
Gigabit Ethernet							X	X	X	X	X	X	X	X	X	X
WAN Ports																
Sync Serial		X	X	X	X		X	X		X	X	X	X			
Sync Serial w/ CSU			X	X	X		X	X					X			
ISDN BRI (S/T)		X	X	X	X		X	X	X	X	X					
ISDN BRI (U)		X	X	X	X		X	X	X	X	X					
ISDN PRI/Ch T1					X		X	X	X	X	X		X			
ISDN PRI w/ CSU					X		X	X		X	X					
Async	X	X	X	X	X		X	X								
Analog/POTS		X			X		X	X								
Integrated Modems			X	X	X		X	X								
Integrated Modem WICs			X	X	X		X	X								
HSSI					X[1]		X	X	X	X		X	X			
DS3					X		X	X	X	X	X	X	X	X		X
ATM OC-3					X[1]		X		X	X	X	X	X			X
ATM OC-12										X		X	X			X
ATM	X	X			X		X		X	X	X	X	X			X
ATM - T1/E1					X		X		X	X	X	X				
POS OC-x/STM-x									X	X	X	X	X			X
DPT/RPR OC-12/STM-4										X		X				X
DPT/RPR OC-48/STM-16													X	X	X	X
DPT/RPR OC-192/STM-64																X
ADSL	X	X	X	X	X		X	X								
ADSL over ISDN	X	X	X	X	X		X	X								
G.SHDSL	X	X	X	X	X		X	X								
IDSL		X	X	X	X		X	X								
DPT										X		X	X	X	X	X
Voice Over IP																
Analog Voice Interfaces		X	X[2]		X		X	X								
Digital			X[2]		X		X	X		X	X	X	X			

	SOHO Series	800 Series	1700 Series	1800 Serieis	2600 Series	2800 Series	3700 Series	3800 Series	7100 Series	7200 Series	7300 Series	7500 Series	7600 Series	10000 Series	10720 Series	12000 Series
ISDN BRI Digital Voice Interfaces			X[2]		X		X			X						
Integrated Switching																
Integrated 4-port Switching			X	X												
Integrated 16-port Switching					X		X	X								
Integrated 36-port Switching							X	X								
Inline Power					X[3]		X	X								
Content Acceleration																
Content Engine					X		X	X					X			
Security VPN																
IDS		X	X	X	X		X	X	X	X			X			
Encryption Advanced Integration Modules				X	X		X	X					X			
Encryption Network Module	X	X					X			X			X			

1. Supported on the 2691 only
2. Cisco 1751 and Cisco 1760 only
3. Requires external power source

Memory Information for Routers

Router	Memory Type	Slots	Default Memory	Max Memory	Default Configuration (Notes)
SOHO 78	Flash	1	8 MB	8 MB	No Upgradeable Memory
	DRAM	1	16 MB	16 MB	
SOHO 90	Flash	1	8 MB	8 MB	No Upgradeable Memory
	DRAM	1	32 MB	32 MB	
801, 802, 803, and 804	Flash	1	8 MB	12 MB	4 MB on board and 4 MB or 8 MB Mini flash card
	DRAM	1	8 MB	12 MB	4 MB onboard and 4 MB or 8 MB DIMM module
805	Flash	1	8 MB	12 MB	
	DRAM	1	8 MB (On board)	16 MB	4 MB On board + 4 MB Mini Flash
811 and 813	Flash	1	8 MB	12 MB	4 MB On board + 4 MB or 8 MB Mini Flash
	DRAM	1	8 MB	16 MB	8MB on board and 4MB or 8MB DIMM Module
827-4V	Flash	1	12 MB	16 MB	8 MB On board + 4 MB or 8 MB Mini Flash
	DRAM	1	48 MB	48 MB	16 MB Onboard and 32 MB DIMM module
828	Flash	1	8 MB	16 MB	8 MB On board flash
	DRAM	1	24 MB	32 MB	16MB On board DRAM + 4MB, 8MB or 16MB DIMM module
831, 836, 837	Flash	1	12 MB	24 MB	8MB On board + 4MB, 8MB or 16MB Mini Flash
	DRAM	1	48 MB	48 MB	32MB On board + 16MB DIMM module
1711 and 1712	Flash	1	32 MB	32 MB	
	DRAM	1	64 MB	128 MB	
1721	Flash	1	32 MB	32 MB	
	DRAM	1	64 MB (On board)	128 MB	
1751	Flash	1	32 MB	32 MB	
	DRAM	1	64 MB	128 MB	
1760	Flash	1	32 MB	64 MB	
	DRAM	1	64 MB	128 MB	
1800 Series[1]	Flash	1	32 MB	128 MB	
	DRAM	1	256 MB	384 MB	
2500 Series	Flash	2	8 MB	16 MB	Slot 0 = 8 MB
	DRAM	1	4 MB	16 MB	

Router	Memory Type	Slots	Default Memory	Max Memory	Default Configuration (Notes)
2600 Series	Flash (261xXM, 262xXM, 265xXM)	1	32 MB	48 MB	16 MB on Mother Board; Slot 0 = 32 MB
	Flash (2612)				
	Flash (2691)	1	8 MB	16 MB	Slot 0 = 8 MB
	DRAM (261XM, 262xXM)	2	32 MB	128 MB	Slot 0 = 32 MB
	DRAM (265xXM)	2	128 MB	256 MB	Slot 0 = 128 MB; Slot 1 = empty
	DRAM (2612)	2	128 MB	256 MB	Slot 0 = 128 MB; Slot 1 = empty
	DRAM (2691)	2	32MB	64 MB	Slot 0 = 128 MB; Slot 1 = empty
		2	256 MB	256 MB	Slot 0 = 128 MB; Slot 1 = 128 MB
2800 Series	DRAM (2801)		128 MB	384 MB	
	DRAM (2811)		256 MB	760 MB	
	DRAM (2821)		256 MB	1 GB	
	DRAM (2851)		256 MB	1 GB	
	Compact Flash (2801)		64 MB	128 MB	
	Compact Flash (2811)		64 MB	256 MB	
	Compact Flash (2821)		64 MB	256 MB	
	Compact Flash (2851)		64 MB	256 MB	
3700 Series	Flash (Internal)	1	32 MB	128 MB	
	Flash (External)	1	0 MB	32-128 MB	
	DRAM (SoDIMM)	2	256 MB	256 MB	Slot 0 = 128 MB
3800 Series	Flash (Internal)	1	64 MB	256 MB	Single 64 MB Compact Flash default
	DDR SDRAM (ECC)	2	256 MB	1 GB	Single 256 MB SDRAM default
7100 Series	Flash (PCMCIA)	2	48 MB	110 MB	Slot 0 = 48 MB
	System SDRAM	2	64 MB	256 MB	Slot 0 = 64 MB
	Packet SDRAM		64 MB	64 MB	
7200 Series	Flash (PCMCIA)	2	20 MB	128 MB	
	Flash (non-volatile, fixed config)		128 KB	128 KB	
	Flash (C7200-IO-FE bootflash)	1	4 MB	4 MB	
	Flash (C7200-IO-2FE, C7200-IO-GE/E bootflash)	1	4 or 8 MB	4 or 8 MB	
	DRAM (NPE-225)	1	128 MB	256 MB	Slot 0 = 128 MB DIMM
	DRAM (NPE-300)	4	32+128 MB	32+256 MB	Slot 0 = 32 MB DIMM, Slot 2 = 128 MB DIMM
	DRAM (NPE-400)	1	128 MB	512 MB	Slot 0 = 128 MB SoDIMMs
	DRAM (NSE-1)	1	128 MB	256 MB	Slot 0 = 128 MB DIMM
	DRAM (NPE-G1)	1	256 MB	1 GB	Slot 0 = 128 MB SoDIMM, Slot 2 = 128 MB SoDIMM
7300 Series	Flash (CFM)	1	64 MB	128 MB	
	DRAM	1	128 MB	1024 MB	
7400 Series	Flash (PCMCIA)	2	64 MB	128 MB	
	DRAM (NSE-1) BB	1	256 MB	512 MB	
	DRAM (NSE-1) CP	1	128 MB	512 MB	
7500 Series	Flash (PCMCIA) RSP2, RSP4+	1	16 MB	20 MB	
	Flash (PCMCIA) RSP8	2	20 MB	40 MB	
	Flash (PCMCIA) RSP16	1	48 MB	128 MB	
	Flash (SIMM)	1	8 MB	8 MB	
	DRAM (RSP2)	4	32 MB	128 MB	
	DRAM (RSP4+, RSP8)	2	64 MB	256 MB	
	DRAM (RSP16)	2	128 MB	1 GB	
	DRAM (VIP2-40)	1	32 MB	64 MB	
	DRAM (VIP2-50)	1	32 MB	128 MB	
	DRAM (VIP4-50/80)	1	64 MB	256 MB	
	DRAM (VIP6-80)	1	64 MB	256 MB	
7600 Series	Flash (PCMCIA)	1	16 MB	512 MB	
	DRAM (Sup 2)	1	128 MB	512 MB	
	DRAM (MSFC2)	1	128 MB	512 MB	
	DRAM (PFC2)	1	128 MB	256 MB	
	DRAM (Sup720-3B)	1	512 MB	512 MB	
	DRAM (Sup720-3BXL)	1	1 GB	1 GB	
10000 Series	Flash (PCMCIA)	2	48 MB	128 MB	1 x 48MB ships as default; 128MB is optional
	Flash (Internal)	1	32 MB	32 MB	
	Shared (PRE-1)	1	128 MB	128 MB	
	DRAM (PRE-1)	1	512 MB	512 MB	

Router	Memory Type	Slots	Default Memory	Max Memory	Default Configuration (Notes)
10700 Series	Flash (Internal)	1	32 MB	64 MB	Maximum memory is configured with No Option
	SDRAM RP	1	512 MB	512 MB	
	Packet Buffer	1	64 MB	64 MB	
12000 Series	Flash (PCMCIA)	2	20 MB	20 MB	
	DRAM (GRP-B)	1/2	128 MB	512 MB	Route Memory
	SDRAM (PRP-1)	1/2	512 MB	1 GB	Route Memory
	DRAM (Line Cards)	1/2	128-256 MB	256-512 MB	Route Memory (line card dependent)
	SDRAM (Line Cards)	1/2	128-256 MB	256-512 MB	Packet Memory (line card dependent)
	Shared (PRE-2)	1	128 MB	128 MB	
	DRAM (PRE-2)	1	512 MB	512 MB	

1. Cisco 1800 Series default memory listed is based on overall series offerings. For exact memory listing, see Cisco 1800 Series web site at http://www.cisco.com/go/ISR

Cisco 7000 Series Port Adapter Compatibility Matrix

Port Adapter	7200VXR	7301	7304 Carrier Card	7400	7500	7600
ATM Port Adapters						
PA-A2-4E1XC-OC3SM: CES OC-3 port adapter 4 E1 ports 120 ohms	•	–	–	–	–	–
PA-A2-4E1XC-E3ATM: CES port adapter E3/E1 120 ohms	•	–	–	–	–	–
PA-A2-4E1YC-OC3SM	•	–	–	–	–	–
PA-A2-4E1YC-E3ATM	•	–	–	–	–	–
PA-A2-4T1C-OC3SM: ATM CES port adapter, 4 T1 CES ports and 1 OC-3 ATM SM port	•	–	–	–	–	–
PA-A2-4T1C-T3ATM: ATM CES port adapter, 4 T1 CES ports and 1 T3 ATM port	•	–	–	–	–	–
PA-A3-8T1IMA 8-port ATM inverse Mux T1 port adapter	•	•	–	•	•	•
PA-A3-8E1IMA: 8-port ATM inverse Mux E1 (120 ohm) port adapter	•	•	–	–	•	•
PA-A3-OC3-MM: 1-port ATM-enhanced OC-3c/STM1 multimode port adapter	•	•	•	•	•	• (Native)
PA-A3-OC12-MM: 1-port ATM-enhanced OC-12/STM4 multimode	–	–	–	–	•	–
PA-A3-T3/E3: 1-port ATM-enhanced DS3 port adapter	•	•	•	•	•	• (Native)
PA-A6-OC3XXX: 1-port ATM OC-3 port adapter	•	–	–	•	•	–
PA-A6-T3 or E3: 1-port ATM DS3 (E3) port adapter	•	–	–	•	•	–
Ethernet Port Adapters						
PA-2FE-TX/FX: 2-port Fast Ethernet 100Base-TX/FX port adapter	•	•	• (TX)	•	•	–
PA-4E: 4-port Ethernet 10Base-T port adapter	•	•	•	•	•	–
PA-5EFL: 5-port Ethernet 10Base-FL port adapter	•	•	–	–	•	–
PA-8E: 8-port Ethernet 10Base-T port adapter	•	•	•	•	•	–
PA-FE-TX/FX: 1-port Fast Ethernet 100Base-FX/TX port adapter	•	•	•	•	•	–
PA-GE: Gigabit Ethernet port adapter	•	–	•	•	–	–
Other LAN Port Adapters						
PA-4R-DTR: 4-port dedicated Token Ring, 4/16 Mbps, HDX/FDX	•	–	–	–	•	–

Port Adapter	7200VXR	7301	7304 Carrier Card	7400	7500	7600
PA-F-MM/SM: 1-port FDDI full duplex multimode/single-mode port adapter	–	–	–	–	•	–
PA-F/FD-MM/SM: 1-port FDDI full duplex multimode/single-mode port adapter	–	–	–	–	•	–
Serial Port Adapters						
PA-4E1G/120: 4-port E1 G.703 serial port adapter (120 ohm/balanced)	•	•	•	•	•	–
PA-4T+: 4-port serial port adapter, enhanced	•	•	•	•	•	• (Native)
PA-8T-XXX: 8-port serial, 232 port adapter	•	•	•	•	•	• (Native)
High-speed Serial Port Adapters						
PA-H: 1-port HSSI port adapter	•	•	•	•	•	• (Native)
PA-2H: 2-port HSSI port adapter	•	•	•	•	•	• (Native)
PA-E3: 1-port E3 serial port adapter with E3 DSU	•	•	•	•	•	• (Native)
PA-2E3: 2-port E3 serial port adapter with E3 DSUs	•	•	•	•	•	• (Native)
PA-T3+: 1-port T3 serial port adapter, enhanced	•	•	•	•	•	• (Native)
PA-2T3+: 2-port T3 serial port adapter, enhanced	•	•	•	•	•	• (Native)
Multichannel Serial Port Adapters						
PA-4B-U	•	•	–	–	–	–
PA-8B-S/T: 8-port BRI port adapter, S/T interface	•	•	–	–	–	–
PA-MC-2T(1): 2-port multichannel T1 port adapter with integrated CSU/DSUs	•	•	•	–	•	–
PA-MC-4T(1): 4-port multichannel T1 port adapter with integrated CSU/DSUs	•	•	•	–	•	• (Native)
PA-MC-8T(1): 8-port multichannel T1 port adapter with integrated CSU/DSUs	•	•	•	•	•	• (Native)
PA-MC-8TE1+: 8-port multichannel T1/E1 8PRI port adapter	•	•	•	•	•	•
PA-MC-2E1/120: 2-port multichannel E1 port adapter with G.703 120 ohm interface	•	•	•	•	•	–
PA-MC-8E1/120: 8-port multichannel E1 port adapter with G.703 120 ohm interface	•	•	•	•	•	• (Native)
PA-MC-E3: 1-port multichannel E3 port adapter	•	•	•	•	•	• (Native)
PA-MC-T3: 1-port multichannel T3 port adapter	•	•	•	•	•	• (Native)
PA-MC-2T3+: 2-port multichannel T3 port adapter	•	•	•	•	•	• (Native)
PA-MC-STM-1MM: 1-port multichannel STM-1 multimode port adapter	•	•	•	–	•	• (Native)
PA-MCX-2TE(1): 2-port MIX-enabled multichannel T1/E1 with CSU/DSU	•	–	–	–	–	–
PA-MCX-4TE(1): 4-port MIX-enabled multichannel T1/E1 with CSU/DSU	•	–	–	–	–	–
PA-MCX-8TE(1): 8-port MIX-enabled multichannel T1/E1 with CSU/DSU	•	–	–	–	–	–
PA-POS-OC3-SMI: 1-port OC-3/STM1 POS port adapte	•	•	•	•	•	• (Native)
PA-POS-OC3-SML: 1-port OC-3/STM1 POS port adapter	•	•	•	•	•	• (Native)
PA-POS-2OC3: 2-port OC-3/STM1 POS port adapter	•	–	–	•	•	• (Native)
SONET PAs						

Port Adapter	7200VXR	7301	7304 Carrier Card	7400	7500	7600
PA-POS-OC3-MM: 1-port packet/SONET OC-3c/STM1 multimode port adapter	•	•	•	•	•	• (Native)
Other Port Adapters and SAs						
PA-4C-E: 1-port-enhanced ESCON channel port adapter	•	–	–	–	–	–
PA-FC-1G: Cisco Fiber Channel over IP port adapter interface	•	–	–	•	•	–
SA-ISA: Integrated Services Adapter	•	–	–	–	–	–
SA-VAM: VPN acceleration module for Cisco 7100 and 7200 Series	•	–	–	•	–	–
SA-VAM2: VPN acceleration module 2	•	–	–	–	–	–
PA-SRP-OC12SMI: DPT-OC-12 single-mode intermediate PA	•	–	–	–	–	–
PA-SRP-OC12SMX: DPT-OC-12 single-mode extended reach PA	•	–	–	–	–	–
PA-VXC-2TE1+: 2-port T1/E1 high-capacity enhanced-voice PA	•	•	–	–	•	–
PA-VXB-2TE1+: 2-port T1/E1 moderate-capacity enhanced-voice PA	•	•	–	•	•	–
PA-VXA-1TE1-24+: 1-port T1/E1 digital voice port adapter with 24 channels	•	–	–	•	•	–

Cisco SOHO Series Ethernet, ADSL over ISDN, ADSL and G.SHDSL Routers

The Cisco SOHO series provides an affordable, secure, multi-user access solution to small office/home office (SOHO) customers while reducing deployment and operational costs for service providers. Through the power of Cisco IOS software technology, the Cisco SOHO 91 Ethernet to Ethernet Router, the SOHO 96 ADSL over ISDN, the SOHO 97 ADSL and SOHO 78 G.SHDSL routers provide superior manageability and reliability.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco SOHO 91	• Ethernet WAN port for use with an external DSL or cable modem with 4-port 10/100 switch, stateful firewall and software based encryption
Cisco SOHO 96	• ADSL modem for use of ADSL over ISDN with 4-port 10/100 switch, stateful firewall and software based encryption
Cisco SOHO 97	• ADSL modem for ADSL over POTS with 4-port 10/100 switch, stateful firewall and software based encryption
Cisco SOHO 78	• 4-port Ethernet Hub and 1 G.SHDSL port with firewall security and Cisco IOS manageability and reliability

Key Features

- Integrated security of Cisco IOS Software with Stateful Inspection Firewall and software-based 3DES encryption (no encryption on the SOHO 78)
- Easy setup and deployment using Cisco Router Web Set Up Tool (CRWS)
- Offers many local and remote debug and troubleshooting features in Cisco IOS Software
- Other important features available on SOHO 90 are AAA, L2TP and DynDNS

Competitive Products

- 3Com: OfficeConnect 810
- Alcatel: Speed Touch Pro Router
- Cayman: 3220H
- Efficient: 5861, 5660
- Lucent: CellPipe 50A

- Netopia: R6100, 4533
- Westel: Wirespeed 36R566
- Zyxel: 641, 782
- Nokia: MW1352
- Linksys: Etherfast models

Specifications

Feature	SOHO 91	SOHO 96	SOHO 97	SOHO 78
Fixed LAN Ports	4-port 10/100 Switch	4-port 10/100 Switch	4-port 10/100 Switch	4-port Ethernet hub (10BASE-T)
Fixed WAN Ports	1-port Ethernet (connects to external DSL or cable modem	1-port ADSL over ISDN	1-port ADSL over POTS	1-port G.SHDSL
Flash Memory	8 MB	8 MB	8 MB	8 MB
DRAM Memory	32 MB	32 MB	32 MB	16 MB
Dimensions (HxWxD)	2.0 x 9.7 x 8.5 in.	2.0 x 9.7 x 8.5 in.	2.0 x 9.7 x 8.5 in.	2.0 x 9.9 x 8.3 in. (5.1 x 25.2 x 21.1 cm)

For More Information

See the Cisco SOHO Web site: **http://www.cisco.com/go/soho90**

Cisco 800 Series

The Cisco 800 series router provides enhanced network
security and proven reliability through Cisco IOS software,
for small offices and telecommuters. It connects users to the Internet or to a corporate LAN
via one ADSL, ADSL over ISDN, G.SHDSL, IDSL, ISDN, or serial connection (up to
512 Kbps), or with an Ethernet WAN port connected to an external broadband modem.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco 800 Series	• Companies who Cisco IOS-based networks who want to add telecommuters • Service providers who offer value-added services to small offices • VARs who are familiar with Cisco IOS software and want to profitably service small office customers • Ethernet LAN ports and variety of WAN connectivity, including: ISDN BRI, Frame Relay, ADSL, G.SHDSL, async dialup (see Specifications for details)

Key Features

- Fixed configuration support for several types of WAN connections
- Standard security with ACLs, PAT/NAT, PAP/CHAP, MS-CHAP, Lock and Key, and Generic Routing Encapsulation (GRE) tunneling
- Enhanced security with stateful inspection firewall, IPSec encryption (hardware based on Cisco 830s and AES encryption on Cisco 830s). Also includes security features like IDS, 802.1x, Dynamic Multipoint VPN (DMVPN), EasyVPN and others
- Dial backup via aux/console port on the 830 routers
- Dial backup via integrated ISDN port on the 836
- X.25 over D-channel support on 836
- DMZ interface on all 830 routers
- Toll quality voice with VoIP on Cisco 827-4V. Advanced QoS Features for prioritized voice
- Integrated 4-port 10/100 Ethernet Switch on Cisco 830 series

- Bandwidth optimization features such as compression, Bandwidth-on-Demand, Dial-on-Demand, Always-On-Dynamic-ISDN (AODI), and X.25 over D channel (Cisco 801- 804)
- Support for CAPI applications in the European market (801, 803)

Competitive Products

- 3Com: Office Connect Remote 511/521
- Alcatel: Speed Touch Pro Routers
- Ascend: Pipeline 75/85
- Efficient: 5861 / 5660
- Intel: Express 8100
- Netopia: R3100, R6100, 4533
- Nortel/Bay: Nautica 250
- Nokia: MW1352
- Zyxel: 782
- Linksys: Etherfast

Specifications

Feature	801	802	803	804	811	813
Fixed LAN Port Connections	1-port Ethernet (10BASE-T)	1-port Ethernet (10BASE-T)	4-port Ethernet hub (10BASE-T)	4-port Ethernet hub (10BASE-T)	1-port Ethernet (10BASE-T)	4-port Ethernet hub (10BASE-T)
Fixed WAN Port Connections	1-port ISDN BRI (S/T)	1-port ISDN BRI (U) NT-1	1-port ISDN BRI (S/T) 2 analog ports	1-port ISDN BRI (U) NT-1 2 analog ports	1-port ISDN BRI S/T and 1-port ISDN BRI (U) NT-1	1-port ISDN BRI S/T and 1-port ISDN BRI (U) NT-1 2 analog ports
Flash Memory	8MB (default) 12 MB (max)	8MB (default) 12 MB (max)	8MB (default) 12 MB (max)	8MB (default) 12 MB (max)	4MB (default) 12MB (max)	8MB (default) 12MB (max)
DRAM Memory	8MB (default) 12MB (max)	8MB (default) 12MB (max)	8MB (default) 12MB (max)	8MB (default) 12MB (max)	8MB (default) 16MB (max)	8MB (default) 16MB (max)
Dimensions (HxWxD)	2.0 x 9.9 x 8.3 in. (5.1 x 25.2 x 21.1 cm)	Same as Cisco 801	Same as Cisco 801	Same as Cisco 801	Same as Cisco 801	Same as Cisco 801

Feature	805	827-4V	828	831	836	837
Fixed LAN Port Connections	1-port Ethernet (10BASE-T)	1-port Ethernet (10BASE-T)	4-port Ethernet hub (10BASE-T)	4-port Ethernet switch (10BASE-T)	1-port Ethernet switch (10BASE-T)	4-port Ethernet switch (10BASE-T)
Fixed WAN Port Connections	1-port Serial (Up to 512 KBPS)	1-port ADSL	1-port G.SHDSL	1-port Ethernet	1-port ADSL-over-ISDN, 1-port ISDN S/T	1-port ADSL over POTS
Flash Memory	8MB (default) 12MB (max)	12MB (default) 16MB (max)	8MB (default) 16MB (max)	12MB (default) 24MB (max)	12MB (default) 24MB (max)	12MB (default) 24MB (max)
DRAM Memory	8MB (default) 16MB (max)	48MB (default) 48MB (max)	24MB (default) 32MB (max)	48MB (default) 48MB (max)	48MB (default) 48MB (max)	48MB (default) 48MB (max)
Dimensions (HxWxD)	2.0 x 9.9 x 8.3 in. (5.1 x 25.2 x 21.1 cm)	Same as Cisco 805	Same as Cisco 805	2.0 x 9.7 x 8.5 in.	2.0 x 9.7 x 8.5 in.	2.0 x 9.7 x 8.5 in.

Selected Part Numbers and Ordering Information[1]

Cisco 800 Series Routers

CISCO801	1-port 10BASE-T, 1-port BRI (S/T), IP s/w
CISCO802	1-port 10BASE-T, 1-port BRI (U) w/ NT-1, IP s/w
CISCO803	4-port 10BASE-T hub, 1-port BRI (S/T), 2-port POTS, IP s/w
CISCO804	4-port 10BASE-T hub, 1-port BRI (U) w/ NT-1, 2-port POTS, IP s/w
CISCO805	1-port 10BASE-T, 1-port serial, IP s/w
CISCO801-CAPI	ISDN/Ethernet Router with one-user CAPI license
CISCO803-CAPI	ISDN/Ethernet Router with one-user CAPI license, 4-port hub
CISCO827-4V	1-port ADSL, 1-port 10BASE-T, 4 ports FXS, IP/Voice s/w
CISCO828	1-port G.SHDSL, 4-port 10BASE-T hub, IP s/w
CISCO831-K9 USD 649.00	Cisco 831 Ethernet Router
CISCO836-K9	Cisco 836 ADSL over ISDN Router
CISCO837-K9	Cisco 837 ADSL Router

Cisco 800 Series CD Feature Packs

CD08-BHL-12.0.7.XV=	Cisco 800 Series IP/IPX/FW Plus IPSec 56
CD08-BP-12.07.XV=	Cisco 800 Series IP/IPX/Plus
CD800-5CAPI=	CAPI 5 User CD
CD08-IC-12.0.5T=	Cisco 800 Series Internet DSL
CD08-ICHL-12.0.5T=	Cisco 800 Series Internet DSL FW IPSec56
CD08-IBHL-12.0.5T=	Cisco 800 Series Internet DSL IPX FW IPSec56

Cisco 800 Series Memory Options

MEM800-4F=	Cisco 800 Series, 4 MB Flash Mini-Card
MEM800-8F=	Cisco 800 Series, 8 MB Flash Mini-Card
MEM800-4D=	Cisco 800 Series, 4 MB DRAM DIMM
MEM800-8D=	Cisco 800 Series, 8 MB DRAM DIMM
MEM820-8U16F	Cisco 820 Flash upgrade 8Mbyte-16Mbyte
MEM820-16U20D	Cisco 820 DRAM upgrade 16Mbyte-20Mbyte (16Mbyte-24Mbyte & 16Mbyte-32Mbyte also available)
MEM820-24U32D	Cisco 820 DRAM 24Mbyte upgrade to 32 Mbytes

Cisco 800 Series Accessories

PWR-8xx-WW1=	Cisco 8xx Series, AC Power Supply Spare

Cisco 800 Series Basic Maintenance

CON-SNT-PKG1	Cisco 800 Series SMARTnet Maintenance (8x5xNBD)

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco 800 Series Web site: **http://www.cisco.com/go/800**

Cisco 1800 Series

Cisco 1800 Series integrated services routers are the next evolution of the award-winning Cisco 1700 Series modular access routers. The Cisco 1841 router is designed for secure data connectivity. The Cisco 1841 router features secure, fast, and high-quality delivery of multiple, concurrent services for small-to-medium-sized businesses and small enterprise branch offices. It also offers embedded hardware-based encryption enabled by an optional Cisco IOS Software security image; further enhancement of VPN performance with an optional VPN acceleration module; an intrusion prevention system (IPS) and firewall functions; interfaces for a wide range of connectivity requirements, including support for optional integrated switch ports; plus sufficient performance and slot density for future network expansion and advanced applications as well as an integrated real-time clock.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco 1841	• Secure data access solution for customer environments up to T1/E1/xDSL WAN rates with services turned on • Needs support for a broad array of WAN services • Needs comprehensive security features

Key Features

- Flexibility with internal AIM slot designated for higher speed VPNs and future applications; Provides several slot types to add future connectivity and services on an "integrate-as-you-grow" basis
- Optional integrated 10/100 switching and two onboard 10/100 LAN ports
- Supports the latest Cisco IOS Software-based QoS bandwidth management features
- Advanced device management—using Cisco Router and Security Device Manager
- High-performance processor—Supports concurrent deployment of high-performance, secure data services with headroom for future applications
- Modular architecture—Offers wide variety of LAN and WAN options; network interfaces are field-upgradeable to accommodate future technologies
- Integrated hardware-based encryption acceleration—Offers cryptography accelerator as standard integrated hardware that can be enabled with an optional Cisco IOS Software for 3DES and AES encryption support

- Security performance enhanced feature set—Supports optional VPN acceleration card for VPN 3DES or AES encryption
- Allows LAN segmentation
- Integrated standard power supply—Easier router platform installation and management

Specifications

Features	Cisco 1841
Form factor	Desktop, 1-rack-unit (1RU) height (4.75 cm high with rubber feet)
Target Applications	Secure data
Chassis	Metal
Wall-mountable	Yes
Rack-mountable	No
Dimensions (W x D)	13.5 x 10.8 in. (34.3 x 27.4 cm); Height without rubber feet: 1.73 in. (4.39 cm); Height with rubber feet: 1.87 in. (4.75 cm)
Weight	Maximum: 6.2 lb (2.8 kg); with interface cards and modules; Minimum: 6.0 lb (2.7 kg) (no interface cards and modules)
DRAM	Synchronous dual in-line memory module (DIMM) DRAM
DRAM capacity	Default: 128 MB; Maximum: 384 MB
Flash memory	External compact Flash
Flash memory capacity	Default: 32 MB; Maximum: 128 MB
Modular slots - total	Two
Modular slots (WAN)	Two
Modular slots (HWICs)	Two
Modular slots (voice)	None: The Cisco 1841 does not support voice
Analog/digital voice support	No
VoIP support	Voice-over-IP (VoIP) pass-through only
Onboard Ethernet ports	Two 10/100
Onboard USB ports	One (1.1)
Console port	One -up to 115.2 kbps
Auxiliary port	One: up to 115.2 kbps
Onboard AIM slots	One (internal)
Packet-voice-DSP-module (PVDM) slots on motherboard	None-The Cisco 1841 does not support voice
Integrated H/W-based encryption on motherboard	Yes
Encryption support in software and hardware by default	DES, 3DES, AES 128, AES 192, AES 256
Internal power supply	Yes
Redundant power supply	No
DC power support	No
AC input voltage	100 to 240 VAC
Frequency	50 to 60 Hz
AC input current	1.5A maximum
Output power	50W (maximum)
System Power Dissipation	153 BTU/hr
Cisco IOS Software default image	IP BASE (12.3(8)T)
Operating temp	32 to 104×F (0 to 40×C)
Operating humidity	10 to 85% noncondensing operating; 5 to 95% noncondensing, nonoperating
Nonoperating Temp	-4 to 149×F (-25 to 65×C)
Operating altitude	10,000 feet (3000 meters) @ 77×F (25×C)
Noise level	Normal operating temperature: <78× F/25.6×C : 34 dBA; >78×F/25.6×C through; 104×F/40×C:
Safety	UL60950-1; CAN/CSA 60950-1; AS 3260; EN60950-1
EMI	EN 55022, 1998, class A; CISPR22, 1997, class A; CFR47, Part 15, Subpart B, 1995, class A; EN61000-3-2 Harmonic Current Emission (only for equipment >75W but <16A); EN61000-3-3 Voltage Fluctuation and Flicker (only for equipment £16A)

Features	Cisco 1841
Immunity	CISPR24, 1997 ITE-Immunity characteristics, Limits and methods of measurement; EN 55024,1998 ITE-Immunity characteristics, Limits and methods of measurement; EN50082-1, 1997 Electromagnetic compatibility Generic immunity standard, Part 1
	EN 300 386, 1997 Telecommunications network equipment EMC requirements
	The requirements are covered by the following standards: IEC 61000-4-2:1995 Immunity to Electrostatic Discharges; IEC 61000-4-3:1995 Immunity to Radio Frequency Electromagnetic Fields; IEC 61000-4-4:1995 Immunity to Electrical Fast Transients; IEC 61000-4-5:1995 Immunity to Power Line Transients (Surges); IEC 61000-4-6:1996 Immunity to Radio Frequency Induced Conducted Disturbances; IEC 61000-4-11:1995 Immunity to Voltage Dips, Voltage Variations, and Short Voltage Interruptions
Network homologation	USA: TIA-968-A, T1.TRQ.6-2001; Canada: CS-03; European Union: RTTE Directive 5/99; Argentina: CTR 21; Australia: AS/ACIF S002, S003, S016 , S031, 3043; Brazil: 225-540-788, CTR3, 225-100-717 Edition 3, NET 001/92 1990; China: ITU-G.992.1, ITU-G.992.1, ITU-G.991.2, CTR3, ITU I.431 1993; Hong Kong: HKTA 2033, HKTA 2033, HKTA 2014, HKTA 2017 Issue 3 2003, HKTA 2011 Issue 1, HKTA 2011 Issue 2, HKTA 2013 Issue 1; India: I_DCA_18_02_Jun_99-199, S/ISN-01/02 Issue 1999 S/ISN-02 1 1998, IR/PRI-01/02 Issue 1 1998, S/INT-2W/02 MAY 2001, S/INT-2W/02 MAY 2001; Israel: U.S. approval accepted; Japan: Technical condition (DoC acceptance in process); Korea: U.S. approval accepted; Mexico: U.S. approval accepted; New Zealand: PTC 270/272, CTR 3, ACA 016 Revision 4 1997, PTC 200; Singapore: IDA TS ADSL1 Issue 1, IDA TS ADSL 2, IDA TS HDSL, IDA TS ISDN 1 Issue 1 1999, IDA TS ISDN 3 Issue 1 1999, IDA TS PSTN 1 Issue 1 , IDA TS PSTN 1 Issue 4, IDA TS PSTN 1 Issue 4; South Africa: U.S. approval accepted; Taiwan: U.S. approval accepted

Selected Part Numbers and Ordering Information[1]

Cisco 1800 Series Integrated Services Routers

CISCO1841	Modular Router w/2FE,2 WAN slots,32FL/128DR
CISCO1841-ADSL	1841 ADSLoPOTS Bdle,IP Broadband,32FL/128DR
CISCO1841-ADSLI	1841 ADSLoISDN Bdle,IP Broadband,32FL/128DR
CISCO1841-ADSL-DG	1841 ADSLoPOTS Bdle w/dying gasp,IP Broadband,32FL/128DR
CISCO1841-SHDSL	1841 G.shdsl 2-wire Bdle,IP Broadband,32FL/128DR
CISCO1841-SEC/K9	1841 Security Bundle,Adv. Security,64FL/256DR
CISCO1841-HSEC/K9	1841 Security bundle w/AIM-VPN,Adv.IP Svcs,64FL/256DR
CISCO1841-T1	1841 with WIC-1DSU-T1-V2,IP BASE,32FL/128DR
CISCO1841-T1SEC/K9	1841 Security Bundle w/ WIC-1DSU-T1-V2, Adv.Security,64FL,256DR

Ethernet Switching HWICs

HWIC-4ESW	4-port single-wide 10/100 BaseT Ethernet switch HWIC

Serial WICs

WIC-1T	1-port serial WIC
WIC-2T	2-port serial WIC
WIC-2A/S	2-port asynchronous or synchronous serial WIC

CSU/DSU WICs

WIC-1DSU-T1-V2	1-port T1/Fractional-T1 CSU/DSU WIC
WIC-1DSU-56K4	1-port 4-wire 56-/64-kbps CSU/DSU WIC

ISDN BRI WICs

WIC-1B-U-V2	1-port ISDN Basic Rate Interface (BRI) with integrated NT1 (U interface)
WIC-1B-S/T-V3	1-port ISDN BRI with S/T interface

DSL WICs

WIC-1ADSL	1-port asymmetric DSL (ADSL) over basic-telephone-service WIC
WIC-1ADSL-DG	1-port ADSL over basic telephone service with dying-gasp[1] WIC
WIC-1ADSL-I-DG	1-port ADSL over ISDN with dying-gasp1 WIC
WIC-1SHDSL	1-port G.shdsl WIC (two wire only)
WIC-1SHDSL -V2	1-port G.shdsl WIC (two or four wire)

Analog Modem WICs

WIC-1AM	1-port analog modem WIC
WIC-2AM	2-port analog modem WIC

T1, E1, and G.703 VWICs

VWIC-1MFT-T1	1-port RJ-48 multiflex trunkóT1
VWIC-2MFT-T1	2-port RJ-48 multiflex trunkóT1
VWIC-2MFT-T1-DI	2-port RJ-48 multiflex trunkóT1 with drop and insert
VWIC-1MFT-E1	1-port RJ-48 multiflex trunkóE1
VWIC-1MFT-G703	1-port RJ-48 multiflex trunkóG.703
VWIC-2MFT-E1	2-port RJ-48 multiflex trunkóE1
VWIC-2MFT-E1-DI	2-port RJ-48 multiflex trunkóE1 with drop and insert
VWIC-2MFT-G703	2-port RJ-48 multiflex trunkóG.703

AIMs

AIM-VPN/BPII-PLUS	Enhanced-performance DES, 3DES, AES, and compression VPN encryption AIM

Cisco 1800 Series Memory Options

MEM1841-64D=	64MB SODIMM DRAM for Cisco 1841
MEM1841-128D=	128MB SODIMM DRAM for the Cisco 1841
MEM1841-256D=	256MB SODIMM DRAM for the Cisco 1841
MEM1800-32CF	32MB Cisco 1800 Compact Flash Memory
MEM1800-32CF=	32MB Cisco 1800 Compact Flash Memory
MEM1800-64CF=	64MB Cisco 1800 Compact Flash Memory
MEM1800-128CF=	128MB Cisco 1800 Compact Flash Memory

Cisco 1800 Series CD Feature Packs

CD18-IPB=	CISCO 1841 IP BASE Feature Pack
CD18-BB=	CISCO 1841 IP Broadband Feature Pack
CD18-EB=	CISCO 1841 ENTERPRISE BASE Feature Pack
CD18-AISK9=	CISCO 1841 ADVANCED IP SERVICES Feature Pack
CD18-ASK9=	CISCO 1841 ADVANCED SECURITY Feature Pack
CD18-AESK9=	CISCO 1841 ADVANCED ENTERPRISE SERVICES Feature Pack
CD18-ESK9=	CISCO 1841 ENTERPRISE SERVICES Feature Pack
CD18-SPSK9=	CISCO 1841 SP SERVICES Feature Pack

Cisco 1800 Spares and Accessories

PWR-184X-AC=	Cisco 184X AC standard power supply
ACS-184X=	Accessory Kit for Cisco 184X

Cisco 1800 Series Basic Maintenance

CON-OSP-CISCO1841	Onsite 24x7x4 Modular Router w/2xFE

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the *Distribution Product Reference Guide* at: http://www.cisco.com/dprg (limited country availability).

For More Information

See the Cisco 1800 Series Web site: **http://www.cisco.com/go/ISR**

Cisco 1700 Series

The Cisco 1700 series modular and fixed configuration access routers are designed to provide a cost-effective integrated access platform for small and medium-sized businesses and enterprise small branch offices. Cisco 1711 and 1712 security access routers work with existing broadband modems to provide advanced routing and security functionality. Cisco 1721 modular access routers provide flexible, high-performance data access. Cisco 1751 and Cisco 1760 modular access routers are optimized for voice and data traffic.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco 1711/1712	• Advanced routing and security functionality in one device when connecting to the Internet using a broadband modem • Hardware-assisted high speed 3DES VPN encryption • Back-up interface is need for highly reliable apps • VLAN Configuration is necessary or fixed configuration is sufficient
Cisco 1721	• Secure data-only access solution that adapts to customers' evolving network requirements • Support for data applications including VPNs and broadband access services • A broad array of WAN services supported, including Frame Relay, leased line, ADSL, G.SHDSL, ISDN BRI, X.25, SMDS and more • IPSec 3DES VPN encryption at full T1/E1 speeds • IEEE 802.1Q VLAN Support • Modularity is required
Cisco 1751	All the above, plus: • Analog and digital voice support in a desk-top form factor • 3 modular slots for WAN and Voice interface cards
Cisco 1760	All the above, plus: • 19" rackmount form factor; 4 slots with 2 WIC/VWIC/VIC and 2 VWIC/VIC (voice only) slots • Multiservice analog and digital voice support • Highest performance multi-service router in the Cisco 1700 family • Higher density analog and digital voice support than Cisco 1751

Key Features

- Support for up to 4 serial interfaces or 2 ISDN BRI; 1 autosensing 10/100 Mbps Fast Ethernet LAN connection; 1 auxiliary (AUX) port for dial-up management or low-speed asynchronous connections (up to 112.5 kbps)
- Flexibility—Cisco 1700 Series supports a diverse set of WAN and Voice Interface Cards that are shared with the 1600 (WAN only), 2600/2600XM, and 3600 series routers enabling field upgradeability
- Integrated Device—Cisco 1700 series combines WAN routing, VPN and multiservice access in a single device
- Expansion Slot—optional hardware VPN module for wire-speed IPSec 3DES encryption and can enable future technologies (standard on Cisco 1710, 1711, and 1712)
- Integrated Security—Supports context-based access control for dynamic firewall filtering, denial-of-service detection and prevention, Java blocking, real-time alerts, Intrusion Detection System (IDS), and encryption.
- IEEE 802.1Q VLAN Support
- 1751 and 1760—Cisco IOS-based routers deliver multiservice data/voice/video/fax integration

Specifications

Feature	Cisco 1711/1712	Cisco 1721	Cisco 1751/1751-V	Cisco 1760/1760-V
Fixed LAN Ports (connections)	4-port 10/100 Mbps switch, 1-port autosensing 10/100 Mbps Ethernet	1-port autosensing 10/100 Mbps Ethernet	1-port autosensing 10/100 Mbps Ethernet	1-port autosensing10/100 Mbps Ethernet
Fixed WAN Ports	1-port analog modem (1711), 1-port ISDN S/T interface (1712)	None	None	None
Modular Slots	None	2 WAN slots	3 slots (2 WAN or Voice slots and 1 Voice-only slot)	4 Slots (2 WAN or Voice slots and 2 Voice-only slots)
WAN Interface Card (WIC) Modules	None	See Part Numbers and Ordering Information	See Part Numbers and Ordering Information	See Part Numbers and Ordering Information
Voice Interface Cards (VIC) Modules	None	None	See Part Numbers and Ordering Information	See Part Numbers and Ordering Information
Flash Memory	32 MB Flash (default/max)	32 MB (default); 32 MB (max)	1751 base model: 32 MB (default); 32 MB (max) 1751-V multiservice ready configuration: 32 MB (default); 32 MB (max)	1760 base model: 32-MB Flash Memory (on board) 64-MB (max) 1760-V: 32-MB Flash 64-MB (max)
DRAM Memory	64 MB	64 MB (default); 128 MB (max)	1751 base model: 64 MB (default); 128 MB (max) 1751-V multiservice-ready configuration: 96 MB (default); 128 MB (max)	1760 base model: 64 MB (default)128 MB (max)1760-V: 96 MB (default) 128 MB (max)
Dimensions (HxWxD)	3.1 x 11.2 x 8.7 in.	3.1 x 11.2 x 8.7 in.	4.0 x 11.2 x 8.7 in.	1.7 x 17.5 x 12.8 in.

Selected Part Numbers and Ordering Information[1]

Cisco 1700 Series Modular Access Routers

CISCO1760	10/100 Modular Router w/ 4 slots,19-in Chassis,32F/64D
CISCO1760-ADSL	1760 bundle, w/ADSL POTS WIC, IP/ADSL,32MB FL/64MB DR
CISCO1760-SHDSL	1760 bundle, w/WIC-1SHDSL,IP/ADSL,32MB FL/64MB DR
CISCO1760-VPN/K9	1760 VPN Bndl w/VPN Mod,96MB DRAM,32MB Flash, IP Plus/FW/3DES
CISCO1760-VPN/K9-A	1760 VPN Bnd w/ADSL WIC,VPN Mod,96MB DR,32MB FL,IP+/FW/3DES
CISCO1760-V	10/100 Modular Router w/Voice,19-in Chassis,32MB FL/96MB DR
CISCO1760-V-SRST	Cisco 1760-V with 24-user SRST Feature License,32F/128D
CISCO1760-V3PN/K9	V3PN Bndl w/1760-V/128MB DR/32MB FL/VPN Module/4-Ch DSP
CISCO1751	10/100 Modular Router w/ 3 slots, IOS IP, 32F/64D
CISCO1751-V	10/100 Modular Router w/Voice,32F/96D
CISCO1751-VPN/K9	1751 VPN Bndl w/VPN Mod,96MB DRAM,32MB Flash,IP Plus/FW/3DES
CISCO1751-VPN/K9-A	1751 VPN Bnd w/ADSL WIC,VPN Mod,96MB DR,32MB FL,IP+/FW/3DES
CISCO1721	10/100BaseT Modular Router w/2 WAN slots, 16M Flash/32M DRAM
CISCO1721-ADSL	1721 bundle, w/ADSLoPOTS WIC,IP/ADSL,32MB FL/64MB DR
CISCO1721-ADSLI	1721 bundle w/ADSLoISDN WIC, IP/ADSL,32MB FL/64MB DR
CISCO1721-ADSL-DG	1721 bundle w/WIC-1ADSL-DG, IP/ADSL,32MB FL/64MB DR
CISCO1721-VPN/K9	1721 VPN Bndl w/VPN Mod,96MB DRAM,32MB Flash,IP Plus/FW/3DES
CISCO1721-VPN/K9-A	1721 VPN Bnd w/ADSL WIC,VPN Mod,96MB DR,32MB FL,IP+/FW/3DES
CISCO1721-SHDSL	1721 bundle,w/WIC-1SHDSL,IP/ADSL,32MB FL/64MB DR
CISCO1711-VPN/K9	1711 Security Router w/VPN Mod, 32MB Flash, 64MB DRAM
CISCO1712-VPN/K9	1712 Security Router w/VPN Mod, 32MB Flash, 64MB DRAM

Cisco 1751 Software Feature Packs for Cisco IOS Release 12.1.(5)YB

CD17-C-12.1.5=	IP
CD17-C-12.1.5=	IP ADSL
CD17-C7P-12.1.5=	IP Plus ADSL
CD17-C7K2-12.1.5=	IP Plus IPSec 3DES ADSL
CD17-CH-12.1.5=	IP/FW/IDS
CD17-B-12.1.5=	IP/IPX
CD17-B7HP-12.1.5=	IP/IPX/FW/IDS Plus ADSL
CD17-C7HK2-12.1.5=	IP/FW/IDS Plus IPSec 3DES ADSL
CD17-Q7HK2-12.1.5=	IP/IPX/AT/IBM/FW/IDS Plus IPSec 3DES
CD17-C7VP-12.1.5=	IP/Voice Plus
CD17-C7VP-12.1.5=	IP/Voice Plus ADSL
CD17-C7HV-12.1.5=	IP/Voice/FW/IDS Plus ADSL
CD17-C7VK2-12.1.5=	IP/Voice Plus IPSec 3DES ADSL
CD17-C7HVK2-12.1.5=	IP/Voice/FW/IDS Plus IPSec 3DES ADSL
CD17-Q7HVK2-12.1.5=	IP/IPX/AT/IBM/FW/IDS/Voice Plus IPSec 3DES

Cisco 1700 Series Memory Options

MEM-1700-4MFC=	Cisco 1700 Series, 4 MB Mini-Flash Card
MEM-1700-8MFC=	Cisco 1700 Series, 8 MB Mini-Flash Card
MEM-1700-16D=	Cisco 1700 Series, 16 MB DRAM DIMM
MEM-1700-32D=	Cisco 1700 Series, 32 MB DRAM DIMM
MEM-1700-64D=	Cisco 1700 Series, 64 MB DRAM DIMM

Cisco 1700 Series WAN Interface Cards (WICs)

WIC-1T	1-port Serial WAN Interface Card
WIC-2T	2-port Serial WAN Interface Card
WIC-2A/S	2-port Async/Sync Serial WAN Interface Card
WIC-1B-S/T	1-port BRI (S/T) WAN Interface Card (dial and leased line)
WIC-1B-U-V2	1-Port ISDN BRI NT-1 WIC for 1700, 2600, 3600 and 3700 series
WIC-1DSU-56K4	1-port 4-Wire 56/64 Kbps w/ (DSU/CSU) WAN Interface Card
WIC-1DSU-T1-V2	1-Port T1/Fractional T1 DSU/CSU WAN Interface Card: Ver. 2
WIC-1ADSL=	1-port ADSL WAN Interface Card
WIC-1ADSL-I-DG=	1-port ADSLoISDN Wan Interface Card
WIC-1ADSL-DG=	1-port ADSLoPOTS WIC w/Dying Gasp
WIC-1SHDSL	1-port G.SHDSL WAN Interface Card
WIC-1ENET=	1-port Ethernet Interface Card
WIC-1AM	1-port Analog Modem WAN Interface Card
WIC-2AM	2-port Analog Modem WAN Interface Card

Cisco 1751/1760 Voice Interface Cards

VIC-2FXS	2-port Voice Interface Card FXS
VIC-4FXS	4-port Voice Interface Card FXS
VIC-2FXO	2-port Voice Interface Card FXO
VIC-2E/M	2-port Voice Interface Card E&M
VIC-2FXO-EU	2-port Voice Interface Card FXO for Europe
VIC-2FXO-M	32-port Voice Interface Card FXO for Australia

VIC-2BRI-NT/TE	2-port Voice Interface Card-BRI (NT & TE)
VIC-2FXO-M1	2-port FXO for U.S. with battery reversal
VIC-2FXO-M2	2-port FXO for Europe with battery reversal
VIC-2DID	2-port FXO analog DID
VIC2-2FXS	Two-port Voice Interface Card - FXS
VIC2-2FXO	Two-port Voice Interface Card - FXO (Universal)
VIC2-4FXO	Four-port Voice Interface Card - FXO (Universal)
VIC2-2E/M	Two-port Voice Interface Card - EandM
VIC2-2BRI-NT/TE	Two-port Voice Interface Card - BRI (NT and TE)
Cisco 1700 Multiflex Voice / WAN interface Cards	
VWIC-1MFT-E1	1-Port RJ-48 Multiflex Trunk - E1
VWIC-1MFT-E1=	1-Port RJ-48 Multiflex Trunk - E1
VWIC-1MFT-G703	1-Port RJ-48 Multiflex Trunk - G.703
VWIC-1MFT-G703=	1-Port RJ-48 Multiflex Trunk - G.703
VWIC-2MFT-E1	2-Port RJ-48 Multiflex Trunk - E1
VWIC-2MFT-E1=	2-Port RJ-48 Multiflex Trunk - E1
VWIC-2MFT-E1-DI	2-Port RJ-48 Multiflex Trunk - E1 With Drop and Insert
VWIC-2MFT-E1-DI=	2-Port RJ-48 Multiflex Trunk - E1 With Drop and Insert
VWIC-2MFT-G703	2-Port RJ-48 Multiflex Trunk - G.703
VWIC-2MFT-G703=	2-Port RJ-48 Multiflex Trunk - G.703
VWIC-1MFT-T1	1-Port RJ-48 Multiflex Trunk - T1
VWIC-1MFT-T1=	1-Port RJ-48 Multiflex Trunk - T1
VWIC-2MFT-T1-DI	2-Port RJ-48 Multiflex Trunk - T1 With Drop and Insert
VWIC-2MFT-T1-DI=	2-Port RJ-48 Multiflex Trunk - T1 With Drop and Insert
VWIC-2MFT-T1	2-Port RJ-48 Multiflex Trunk - T1
VWIC-2MFT-T1=	2-Port RJ-48 Multiflex Trunk - T1
Cisco 1700 Module Options	
MOD1700-VPN	Cisco 1700 Series VPN Module
Cisco 1700 Spares and Accessories	
PWR-1700-WW1=	Cisco 1700 AC Power Supply-worldwide
PVDM-256K-4=	4-Channel Packet Voice/Fax DSP Module
PVDM-256K-8=	8-Channel Packet Voice/Fax DSP Module
PVDM-256K-12=	12-Channel packet Voice/Fax DSP Module
PVDM-256K-16HD=	16-Channel Packet Voice/Fax DSP Module for 1700
PVDM-256K-20HD=	20-Channel Packet Voice/Fax DSP Module for 1700
Cisco 1700 Series Basic Maintenance	
CON-OSP-1721	24x7x4 Onsite Svc, 10/100BaseT Modular Router w/2 WAN slots
CON-OSP-1751	24x7x4 Onsite Svc, 10/100 Modular Router (1751)
CON-OSP-1760	24x7x4 Onsite Svc, 10/100 Modular Router w/ 2WIC/VIC,2VIC

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For More Information

See the Cisco 1700 Series Web site: **http://www.cisco.com/go/1700**

Cisco 2800 Series

The Cisco 2800 Series Integrated Services Routers offers performance improvements, increased security and voice performance, new embedded service options, and increased slot performance and density. It maintains support for most existing interface cards and modules available for the Cisco 1700 Series and Cisco 2600 Series routers. Comprised of four new platforms: the Cisco 2801, the Cisco 2811, the Cisco 2821, and the Cisco 2851 router, the Cisco 2800 Series features the ability to deliver multiple high-quality simultaneous services at wire speed at up to multiple T1/E1/xDSL connections.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco 2800	• Performance and densities for concurrent data, security, voice, and advanced services up to multiple T1/E1/xDSL connections
	• VPN connections, or plan to migrate to them over time
	• Integrated security services as part of the Cisco Self Defending Network, which enable network device protection, threat defense, secure connectivity, and endpoint protection and control
	• High-availability features such as an integrated redundant power supply (RPS) connector for quick connections to an external redundant power supply, Error Correction Code (ECC) DDR SDRAM memory to detect and correct SDRAM errors without user intervention, and Cisco IOS Software warm reboot support for reduce downtime caused by system reboots
	• Secure integrated call processing, voice mail, flexible telephony interfaces, redundancy for centralized call processing, or robust DSP support, including local conferencing and transcoding
	• Advanced management for security, routing, quality of service (QoS), and switching services with Cisco SDM Version 2.0.

Key Features

- Modular architecture—A wide variety of LAN and WAN options are available. Network interfaces can be upgraded in the field to accommodate future technologies; Several types of slots are available to add connectivity and services in the future on an "integrate-as-you-grow" basis
- Embedded security hardware acceleration—embedded hardware cryptography accelerators, which when combined with an optional Cisco IOS Software upgrade help enable WAN link security and VPN services
- Integrated dual Fast Ethernet or Gigabit Ethernet ports--The Cisco 2800 Series provides two 10/100 Ethernet ports on the Cisco 2801 and Cisco 2811 and two 10/100/1000 Ethernet ports on the Cisco 2821 and Cisco 2851.
- Optional integrated power supply for distribution of Power over Ethernet (PoE)
- High-performance WIC (HWIC) slots with enhanced functions; Dual AIM slots; Packet voice DSP module (PVDM) slots on motherboard
- Real-time clock support
- Network Admission Control (NAC)—A Cisco Self-Defending Network initiative seeks to dramatically improve the ability of networks to identify, prevent, and adapt to threats by allowing network access only to compliant and trusted endpoint devices
- Support for an optional dedicated security AIM
- Eases administration and management of point-to-point VPNs by pushing new security policies from a single headend to remote sites
- DSP modules deliver support for analog and digital voice, conferencing, transcoding, and secure Real-Time Transport Protocol (RTP) applications.
- On board hardware-based encryption for Digital Encryption Standard (DES), Triple DES (3DES), Advanced Encryption Standard (AES), and onboard slots for packet voice DSP modules (PVDMs), and they all include high-speed Ethernet interfaces

Competitive Products

- Juniper: J Series
- 3Com: SuperStack II NETBuilder SI and Pathbuilder S400, 5000 & 6000 Series
- Intel/Shiva: LanRover Family
- Motorola: Vanguard 645x/643x

- Nortel/Bay: Advanced Remote Node (ARN), Passport 4400 series
- FutureWei/Quidway®: R2630/31E
- Tasman: 2004, 1400
- Huawei: AR2800

Specifications

Feature	Cisco 2801	Cisco 2811	Cisco 2821	Cisco 2851
Fixed USB 1.1 ports	1	2	Sames As Cisco 2811	Sames As Cisco 2811
Onboard LAN ports	2 - 10/100	Sames As Cisco 2801	2 - 10/100/1000	Sames As Cisco 2821
Onboard AIM (internal) slot	2	Sames As Cisco 2801	Sames As Cisco 2801	Sames As Cisco 2801
Interface card slots	4 slots; 2 slots support HWIC, WIC, VIC, or VWIC type modules 1 slot supports WIC, VIC, or VWIC type modules 1 slot supports VIC or VWIC type modules	4 slots, each slot can support HWIC, WIC, VIC, or VWIC type modules	Sames As Cisco 2811	Sames As Cisco 2811
Network-module slot	No	1 slot, supports NM and NME type modules	Sames As Cisco 2811	Sames As Cisco 2811
Extension Voice Module Slot	0	Sames As Cisco 2801	Sames As Cisco 2801	1
PVDM (DSP) slots on motherboard	2	Sames As Cisco 2801	Sames As Cisco 2801	3
Integrated hardware-based encryption	Yes	Sames As Cisco 2801	Sames As Cisco 2801	Sames As Cisco 2801
VPN hardware acceleration (on motherboard)	DES, 3DES, AES 128, AES 192, and AES 256	Sames As Cisco 2801	Sames As Cisco 2801	Sames As Cisco 2801
Optional integrated in-line power (PoE)	Yes, requires AC-IP power supply	Sames As Cisco 2801	Sames As Cisco 2801	Sames As Cisco 2801
Console port (up to 115.2 kbps)	1	Sames As Cisco 2801	Sames As Cisco 2801	Sames As Cisco 2801
Auxiliary port (up to 115.2 kbps)	1	Sames As Cisco 2801	Sames As Cisco 2801	Sames As Cisco 2801
Minimum Cisco IOS Software release	12.3(8)T	Sames As Cisco 2801	Sames As Cisco 2801	Sames As Cisco 2801
Rack mounting	Yes, 19-inch	Yes, 19- and 23-in. options	Sames As Cisco 2811	Sames As Cisco 2811
Wall mounting	No	Yes	Sames As Cisco 2801	Sames As Cisco 2801
AC input voltage	100 to 240 VAC, autoranging	Sames As Cisco 2801	Sames As Cisco 2801	Sames As Cisco 2801
AC input frequency	47-63 Hz	Sames As Cisco 2801	Sames As Cisco 2801	Sames As Cisco 2801
AC input current	2A (110V); 1A (230V)	Sames As Cisco 2801	3A (110V); 2A (230V)	Sames As Cisco 2821
AC input surge current	"50A maximum, one cycle (-48V power included)	Sames As Cisco 2801	Sames As Cisco 2801	Sames As Cisco 2801
AC-IP max in-line power distribution	120W	160W	240W	Sames As Cisco 2821
AC-IP input current	2A (110V); 1A (230V)	Sames As Cisco 2801	Sames As Cisco 2801	Sames As Cisco 2801
AC-IP input surge current	50A maximum, one cycle (−48V power included)	Sames As Cisco 2801	Sames As Cisco 2801	Sames As Cisco 2801
DC input voltage	No DC Power Option available	24 to 60 VDC, autoranging positive or negative	24 to 60 VDC, autoranging positive or negative	Sames As Cisco 2811
DC input current	No DC Power Option available	8A (24V) 3A (60V) Startup current 5A<10 ms	12A (24V) 5A (60V) Startup current 50A<10 ms	Sames As Cisco 2821
Power dissipation— AC without IP phone support	150W (511 BTU/hr)	170W (580 BTU/hr)	280W (955 BTU/hr)	Sames As Cisco 2821
Power dissipation— AC with IP phone support—system only	150W (511 BTU/hr)	210W (717 BTU/hr)	310W (1058 BTU/hr)	Sames As Cisco 2821

Feature	Cisco 2801	Cisco 2811	Cisco 2821	Cisco 2851
Power dissipation— AC with IP phone support-IP phones	180W (612 BTU/hr)	160W (546 BTU/hr)	240W (819 BTU/hr)	Sames As Cisco 2821
Power dissipation— DC	Not applicable	180W (614 BTU/hr)	300W (1024 BTU/hr)	Sames As Cisco 2821
RPS	No	External only, connector for RPS provided by default	Sames As Cisco 2811	Sames As Cisco 2811
Recommended RPS unit	No RPS option	Cisco RPS-675 Redundant Power System	Sames As Cisco 2811	Sames As Cisco 2811
Operating temp	32 to 104×F; (0 to 40×C)	Sames As Cisco 2801	Sames As Cisco 2801	Sames As Cisco 2801
Operating humidity	10 to 85% noncondensing	5 to 95%, noncondensing	Sames As Cisco 2811	Sames As Cisco 2811
Nonoperating temp	N/A	−4° to 149°F (−20° to 65°C)	Sames As Cisco 2811	Sames As Cisco 2811
Dimensions (H x W x D)	1.72 x 17.5 x 16.5 in. (43.7 x 445 x 419 mm)	1.75 x 17.25 x 16.4 in. (44.5 x 438.2 x 416.6 mm)	3.5 x 17.25 x 16.4 in. (88.9 x 438.2 x 416.6 mm)	Sames As Cisco 2821
Rack height	1 rack unit (1RU)	1 rack unit (1RU)	2RU	Sames As Cisco 2821
Weight (configured)	13.7 lb (6.2 kg)	14 lb (6.4 kg)	25 lb (11.4 kg)	Sames As Cisco 2821
Noise level (min/max)	39 dBA for normal operating temperature (<90°F/32.2°C) 53.5 dBA (@ maximum fan speed)	47 dBA for normal operating temperature (<90°F/32.2°C) 57 dBA (@ maximum fan speed)	44 dBA for normal operating temperature (<90°F/32.2°C) 53 dBA (@ maximum fan speed)	Sames As Cisco 2821
Safety	UL 60950 CAN/CSA C22.2 No. 60950 IEC 60950 EN 60950-1 AS/NZS 60950	Sames As Cisco 2801	Sames As Cisco 2801	Sames As Cisco 2801
Immunity	EN300386 EN55024/CISPR24 EN50082-1 EN61000-6-2	Sames As Cisco 2801	Sames As Cisco 2801	Sames As Cisco 2801
EMC	FCC Part 15; ICES-003 Class A; EN55022 Class A; CISPR22 Class A; AS/NZS 3548 Class A; VCCI Class A EN 300386; EN61000-3-3; EN61000-3-2	Sames As Cisco 2801	Sames As Cisco 2801	Sames As Cisco 2801
TELCOM	Telecom compliance standards depend upon country and interface type. Interfaces comply with FCC Part 68, CS-03, JATE Technical Conditions, European Directive 99/5/EC and relevant TBRs. See the datasheet for the specific interface card.	Sames As Cisco 2801	Sames As Cisco 2801	Sames As Cisco 2801

Selected Part Numbers and Ordering Information[1]

Cisco 2800 Series Router

CISCO2801	Integrated services router with AC power, 2FE, 4 Interface Card Slots, 2 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software
CISCO2801-AC-IP	Integrated services router with AC power including Inline power distribution capability, 2FE, 4 Interface Card Slots, 2 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software
CISCO2811	Integrated services router with AC power, 2FE, 1 NME, 4 HWICs, 2 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software
CISCO2811-AC-IP	Integrated services router with AC power including Inline power distribution capability, 2FE, 1 NME, 4 HWICs, 2 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software
CISCO2811-DC	Integrated services router with DC power, 2FE, 1 NME, 4 HWICs, 2 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software
CISCO2821	Integrated services router with AC power, 2GE, 1 NME-X, 1 EVM, 4 HWICs, 2 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software
CISCO2821-AC-IP	Integrated services router with AC power including inline power distribution capability, 2GE, 1 NME-X, 1 EVM, 4 HWICs, 3 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software
CISCO2821-DC	Integrated services router with DC power, 2GE, 1 NME-X, 1 EVM, 4 HWICs, 3 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software
CISCO2851	Dual Gigabit Ethernet integrated services router with AC power, 2GE, 1 NME-XD, 1 EVM, 4 HWICs, 3 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software
CISCO2851-AC-IP	Integrated services router with AC power including inline power distribution capability, 2GE, 1 NME-XD, 1 EVM, 4 HWICs, 3 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software
CISCO2851-DC	Integrated services router with DC power, 2GE, 1 NME-XD, 1 EVM, 4 HWICs, 3 PVDM slots, 2 AIMs, and Cisco IOS IP Base Software

Ethernet Switching Network Modules

NM-16ESW	16-port 10/100 Cisco EtherSwitchÆ Network Module
NM-16ESW-1GIG	16-port 10/100 Cisco EtherSwitch Network Module with 1 Gigabit Ethernet (1000BASE-T) port
NM-16ESW-PWR	16-port 10/100 Cisco EtherSwitch Network Module with in-line power support
NM-16ESW-PWR-1GIG	16-port 10/100 Cisco EtherSwitch Network Module with in-line power and Gigabit Ethernet
NMD-36ESW	36-port 10/100 Cisco EtherSwitch High-Density Services Module (HDSM)
NMD-36ESW-2GIG	36-port 10/100 Cisco EtherSwitch HDSM with 1 Gigabit Ethernet (1000BASE-T) port
NMD-36ESW-PWR	36-port 10/100 Cisco EtherSwitch HDSM with in-line power support
NMD-36ESW-PWR-2G	36-port 10/100 Cisco EtherSwitch HDSM with in-line power and Gigabit Ethernet

Serial Connectivity Network Modules

NM-1T3/E3	1-port clear-channel T3/E3 network module
NM-1HSSI	1-port High-Speed Serial Interface (HSSI) network module
NM-4A/S	4-port asynchronous/synchronous serial network module
NM-8A/S	8-port asynchronous/synchronous serial network module
NM-16A/S	16-port asynchronous/synchronous serial network nodule
NM-16A	16-port asynchronous serial network module
NM-32A	32-port asynchronous serial network module

Channelized T1/E1 and ISDN Network Modules

NM-1CE1T1-PRI	1-port Channelized E1/T1/ISDN PRI network module
NM-2CE1T1-PRI	2-port Channelized E1/T1/ISDN PRI network module
NM-4B-S/T	4-port ISDN BRI network module (S/T interface)
NM-4B-U	4-port ISDN BRI network module with integrated Network Termination 1 (NT1) (U interface)
NM-8B-S/T	8-port ISDN BRI network module (S/T interface)
NM-8B-U	8-port ISDN BRI network module with integrated NT1 (U interface)

ATM Network Modules

NM-1A-T3	1-port DS-3 ATM network module
NM-1A-E3	1-port E3 ATM network module

Analog Dialup and Remote Access Network Modules

NM-8AM-V2	8-port analog modem network module with v.92
NM-16AM-V2	16-port analog modem network module with v.92

Voice Network Modules and Accessories

NM-HD-1V	1-slot IP Communications voice and fax network module
NM-HD-2V	2-slot IP Communications voice and fax network module
NM-HD-2VE	2-slot IP Communications enhanced voice and fax network module
NM-HDA-4FXS	High-density analog voice and fax network module with 4 FXS slots
NM-HDV2	IP Communications high-density voice and fax network module
NM-HDV2-1T1/E1	1-port T1/E1 IP Communications high-density voice and fax network module
NM-HDV2-2T1/E1	2-port T1/E1 IP Communications high-density voice and fax network module
NM-HDV=	High-density voice and fax network module (single VIC slot)
NM-HDV-1T1-12	1-port 12-channel T1 voice and fax network module
NM-HDV-1T1-24	1-port 24-channel T1 voice and fax network module
NM-HDV-1T1-24E	Single-port 24-enhanced-channel T1 voice and fax network module
NM-HDV-2T1-48	2-port 48-channel T1 voice and fax network module
NM-HDV-1E1-12	1-port 12-channel E1 voice and fax network module
NM-HDV-1E1-30	1-port 30-channel E1 voice and fax network module
NM-HDV-1E1-30E	1-port 30-enhanced-channel E1 voice and fax network module

NM-HDV-2E1-60	2-port 60-channel E1 voice and fax network module
NM-HDV-1J1-30	1-port 30-channel J1 high-density voice network module
NM-HDV-1J1-30E	1-port 30-enhanced-channel J1 high-density voice network module
NM-HDV-FARM-C36	36-port transcoding and conferencing DSP farm
NM-HDV-FARM-C54	54-port transcoding and conferencing DSP farm
NM-HDV-FARM-C90	90-port transcoding and conferencing DSP farm

Application Network Modules

NM-CE-BP-40G-K9	Cisco Content Engine Network Module, basic performance, 40-GB IDE hard disk
NM-CE-BP-80G-K9	Cisco Content Engine Network Module, basic performance, 80-GB IDE hard disk
NM-CE-BP-SCSI-K9	Cisco Content Engine Network Module, basic performance, Small Computer System Interface (SCSI) controller
NM-CIDS-K9	Cisco IDS Network Module
NM-CUE	Cisco Unity Express Voice-Mail Network Module
NM-NAM	Cisco 2600, 3660, and 3700 series network analysis module

Alarm Monitoring and Control Network Modules and Accessories

NM-AIC-64	Alarm monitoring and control network module

Circuit Emulation Service over IP (CESoIP) Network Modules

NM-CEM-4SER	4-port serial CESoIP network module
NM-CEM-T1E1	4-port T1/E1 CESoIP network module

Extension Voice Modules

EVM-HD-8FXS/DID	High-density voice and fax extension module - 8 FXS or DID

Ethernet Switching HWICs

HWIC-4ESW	4-port single-wide 10/100BASE-T Ethernet switch HWIC
HWIC-D-9ESW	9-port double-wide 10/100BASE-T Ethernet switch HWIC
HWIC-4ESW-POE	4-port Ethernet switch HWIC, PoE capable
HWIC-D-9-ESW-POE	9-port Ethernet switch HWIC, PoE capable

Gigabit Ethernet HWICs

HWIC-1GE-SFP	

Serial WICs

WIC-1T	1-port high-speed serial WIC
WIC-2T	2-port high-speed serial WIC
WIC-2A/S	2-port asynchronous/synchronous serial WIC

CSU/DSU WICs

WIC-1DSU-T1-V2	1-port T1/Fractional-T1 DSU/CSU WIC
WIC-1DSU-56K4	1-port 4-wire 56-/64-kbps CSU/DSU WIC

ISDN BRI WICs

WIC-1B-U-V2	1-port ISDN BRI with integrated NT1 (U interface)
WIC-1B-S/T-V3	1-port ISDN BRI with S/T interface

DSL WAN Interface Cards

WIC-1ADSL	1-port asymmetric DSL (ADSL) over basic-telephone-service WIC
WIC-1ADSL-DG	1-port ADSL over basic telephone service with dying-gasp WIC
WIC-1ADSL-I-DG	1-port ADSL over ISDN with dying-gasp WIC
WIC-1SHDSL	1-port G.shdsl WIC (two wire only)
WIC-1SHDSL-V2	1-port G.shdsl WIC (two or four wire)

Analog Modem WICs

WIC-1AM	1-port analog modem WIC
WIC-2AM	2-port analog modem WIC

T1, E1, and G.703 Multiflex Trunk Voice Cards and WICs

VWIC-1MFT-T1	1-port RJ-48 multiflex trunk - T1
VWIC-2MFT-T1	2-port RJ-48 multiflex trunk - T1
VWIC-2MFT-T1-DI	2-port RJ-48 multiflex trunk - T1 with drop and insert
VWIC-1MFT-E1	1-port RJ-48 multiflex trunk - E1
VWIC-1MFT-G703	1-port RJ-48 multiflex trunk - G.703
VWIC-2MFT-E1	2-port RJ-48 multiflex trunk - E1
VWIC-2MFT-E1-DI	2-port RJ-48 multiflex trunk - E1 with drop and insert
VWIC-2MFT-G703	2-port RJ-48 multiflex trunk - G.703

VICs

VIC-2DID	2-port DID voice and fax interface card
VIC-1J1	1-port digital VIC (J1) for Japan
VIC-4FXS/DID	4-port FXS or DID VIC
VIC2-2FXS	2-port VIC - FXS
VIC2-2FXO	2-port VIC - FXO (universal)
VIC2-4FXO	4-port VIC - FXO (universal)
VIC2-2E/M	2-port VIC - E&M
VIC2-2BRI-NT/TE	2-port VIC card - BRI (NT and TE)

AIMs

AIM-ATM	High-performance ATM SAR AIM
AIM-COMPR2-V2	Data-compression AIM

AIM-CUE	Cisco Unity Express Voice-Mail AIM
AIM-VPN/EPII-PLUS	Enhanced-performance DES, 3DES, AES, and compression VPN encryption AIM

PVDM Support on Motherboard Slots

PVDM2-8	8-channel fax and voice DSP module
PVDM2-16	16-channel fax and voice DSP module
PVDM2-32	32-channel fax and voice DSP module
PVDM2-48	48-channel fax and voice DSP module
PVDM2-64	64-channel fax and voice DSP module

Voice and Video VPN (V3PN) Bundles

CISCO2851-V3PN/K9	Cisco 2851 V3PN Bundle with IOS Advanced IP Services Image, PVDM2-48, FL-CCME (72/96^2 users), AIM-VPN/EPII-PLUS, 64 MB Flash/256 MB DRAM
CISCO2821-V3PN/K9	Cisco 2821 V3PN Bundle with IOS Advanced IP Services Image, PVDM2-32, FL-CCME (48 users), AIM-VPN/EPII-PLUS, 64 MB Flash/256 MB DRAM
CISCO2811-V3PN/K9	Cisco 2811 V3PN Bundle with IOS Advanced IP Services Image, PVDM2-16, FL-CCME (36 users), AIM-VPN/EPII-PLUS, 64 MB Flash/256 MB DRAM

Voice Bundles

CISCO2851-V/K9	Cisco 2851 Voice Bundle with IOS SP Services, PVDM2-48, 64 MB Flash/256 MB DRAM
CISCO2851-CCME/K9	Cisco 2851 Voice Bundle with IOS SP Services, PVDM2-48, FL-CCME (72/96^2 users), 64 MB Flash/256 MB DRAM
CISCO2851-SRST/K9	Cisco 2851 Voice Bundle with IOS SP Services, PVDM2-48, FL-SRST (72/96^2 users), 64 MB Flash/256 MB DRAM
CISCO2821-V/K9	Cisco 2821 Voice Bundle with IOS SP Services, PVDM2-32, 64 MB Flash/256 MB DRAM
CISCO2821-CCME/K9	Cisco 2821 Voice Bundle with IOS SP Services, PVDM2-32, FL-CCME (48 users), 64 MB Flash/256 MB DRAM
CISCO2821-SRST/K9	Cisco 2821 Voice Bundle with IOS SP Services, PVDM2-32, FL-SRST(48 users), 64 MB Flash/256 MB DRAM
CISCO2811-V/K9	Cisco 2811 Voice Bundle with IOS SP Services, PVDM2-16, 64 MB Flash/256 MB DRAM
CISCO2811-CCME/K9	Cisco 2811 Voice Bundle with IOS SP Services, PVDM2-16, FL-CCME (36 users), 64 MB Flash/256 MB DRAM
CISCO2811-SRST/K9	Cisco 2811 Voice Bundle with IOS SP Services, PVDM2-16, FL-SRST (36 users), 64 MB Flash/256 MB DRAM
CISCO2801-V/K9	Cisco 2801 Voice Bundle with IOS SP Services, PVDM2-8, 64 MB Flash/256 MB DRAM
CISCO2801-CCME/K9	Cisco 2801 Voice Bundle with IOS SP Services, PVDM2-8,FL-CCME (24 users), 64 MB Flash/256 MB DRAM
CISCO2801-SRST/K9	Cisco 2801 Voice Bundle with IOS SP Services, PVDM2-8,FL-SRST (24 users), 64 MB Flash/256 MB DRAM

Security Bundles

CISCO2851-SEC/K9	Cisco 2851 Security Bundle with IOS Advanced Security, 64 MB Flash/256 MB DRAM
CISCO2851-HSEC/K9	Cisco 2851 Security Bundle with IOS Advanced IP Services AIM-VPN/EPII-PLUS, 64 MB Flash/256 MB DRAM
CISCO2821-SEC/K9	Cisco 2821 Security Bundle with IOS Advanced Security, 64 MB Flash/256 MB DRAM
CISCO2821-HSEC/K9	Cisco 2821 Security Bundle with IOS Advanced IP Services, AIM-VPN/EPII-PLUS, 64 MB Flash/256 MB DRAM
CISCO2811-SEC/K9	Cisco 2811 Security Bundle with IOS Advanced Security, 64 MB Flash/256 MB DRAM
CISCO2811-HSEC/K9	Cisco 2811 Security Bundle with IOS Advanced IP Services, AIM-VPN/EPII-PLUS, 64 MB Flash/256 MB DRAM
CISCO2801-SEC/K9	Cisco 2801 Security Bundle with IOS Advanced Security,64 MB Flash/256 MB DRAM
CISCO2801-HSEC/K9	Cisco 2801 Security Bundle with IOS Advanced IP Services, AIM-VPN/EPII-PLUS, 64 MB Flash/256 MB DRAM

Broadband Bundles

CISCO2811-ADSL/K9	Cisco 2811 ADSL Bundle with IOS SP Services, WIC-1ADSL(ADSLoPOTS), 64 MB Flash/256 MB DRAM
CISCO2811-SHDSL/K9	Cisco 2811 SHDSL Bundle with IOS SP Services, WIC-1SHDSL-V2 (2 or 4 Wire), 64 MB Flash/256 MB DRAM
CISCO2801-ADSL/K9	Cisco 2801 ADSL Bundle with IOS SP Services, WIC-1ADSL(ADSLoPOTS), 64 MB Flash/192 MB DRAM
CISCO2801-SHDSL/K9	Cisco 2801 SHDSL Bundle with IOS SP Services, WIC-1SHDSL (2-Wire only), 64 MB Flash/192 MB DRAM

1. This is only a small subset of all parts available via URL listed under "For More Information". Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the *Distribution Product Reference Guide* at: http://www.cisco.com/dprg (limited country availability).
2. Available with IOS Version 12.3(11)T release

For More Information

See the Cisco 2800 Series Web site: **http://www.cisco.com/go/2800**

Cisco 2600 Series

The Cisco 2600 series is an award-winning family of modular multiservice access routers, providing flexible LAN and WAN configurations, multiple security options, voice/data integration, and a range of high performance processors.

The Cisco 2600 series family of modular routers include the Cisco 2600XM models, the Cisco 2691 and the Cisco 2612 token ring router. These models deliver extended performance, higher density, enhanced security performance and increased concurrent application support to meet the growing demands of branch offices.

The Cisco 2600XM models are based on the classic Cisco 2600 platform architecture, and extend the performance by as much as 33%. They also increase default platform memory and provide increases in memory capacity at the same price as their Cisco 2600 predecessor.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco 2691	• Enterprises wanting a higher level of performance for a broad range of concurrent remote office applications, including unparalleled voice/data integration, Virtual Private Network (VPN) performance, increased bandwidth to support voice and video applications, and the delivery of Web-based applications.
Cisco 2600XM Series	• Enterprises considering the Cisco 2600 for branch office applications should now regard the Cisco 2600XM as the preferential platform for delivering high performing, flexible solutions to branch and remote offices. • High Performance 10/100 Dual Ethernet Router with 3 WIC Slots, 1 NM
Cisco 2651XM	• High performance Dual 10/100 Modular Router with Cisco IOS IP
Cisco 2650XM	• High performance 10/100 Modular Router with Cisco IOS IP
Cisco 2621XM	• Mid Performance Dual 10/100 Ethernet Router with Cisco IOS IP
Cisco 2620XM	• Mid Performance 10/100 Ethernet Router with Cisco IOS IP
Cisco 2611XM	• Dual 10/100 Ethernet Router with Cisco IOS IP
Cisco 2610XM	• 10/100 Ethernet Router with Cisco IOS IP
Cisco 2612	• One Token Ring port and one Ethernet port for mixed LANs and migrating from Token Ring to Ethernet

Key Features

- Integration/manageability—Lowers cost of ownership and improves ease of remote management, providing integrated "branch-in-a-box" networking that combines CSU/DSUs, multiplexers, modems, voice/data gateways, ISDN NT1s, firewalls, VPNs, encryption, and compression devices
- Multiservice voice/data networks—Reduces phone/fax costs between offices; using Cisco IOS software QoS features (such as RSVP, WFQ, CAR, and RED), voice/fax traffic is digitized and encapsulated in Frame Relay or IP packets and consolidated with data traffic
- 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
- High-density analog/fax network modules provide the ability to directly connect PSTN and legacy telephony equipment to existing Cisco 2600 and 3600 routers
- An EtherSwitch network module for the Cisco 2600/3600 series with 16 ports of 10/100 Ethernet and one optional 1000BaseT (Gigabit Ethernet) connection, providing a fully integrated L2 switch with the capability to support both Line Power to Cisco IP phones and current Aironet 802.11 wireless base stations (with the addition of an external power supply). This provides a single box solution for branch offices deploying converged IP telephony, extending data, voice and video by delivering IP routing, Ethernet switching, fixed wireless solutions and voice gateway capabilities
- A wide range of VPN optimize the Cisco 2600 Series platforms for VPNs and delivers a rich integrated package of routing, firewall, intrusion-detection, and VPN functions

- The introduction of the WIC-ADSL and WIC-1SHDSL, offers business-class broadband service with scalable performance, flexibility, and security for branch and regional offices
- Content Networking Integration and Branch-Office Routing with router-integrated content-delivery system that combines intelligent caching, content routing and management with robust branch-office routing, WAN bandwidth for branch IP services such as VoIP

Competitive Products

- 3Com: SuperStack II NETBuilder SI and Pathbuilder S400
- Intel/Shiva: LanRover Family
- Motorola: Vanguard 645x/643x
- Nortel/Bay: Advanced Remote Node (ARN), Passport 4400 series
- FutureWei/Quidway®: R2630/31E
- Tasman: 2004, 1400

Specifications

Feature	2610/11XM	2620/21XM	2650/51XM	2691
Performance	Up to 20Kpps	Up to 30Kpps	Up to 40Kpps	Up to 70Kpps
Flash Memory (Default/Max)	32 MB/48 MB	32 MB/48 MB	32 MB/48 MB	32 MB/128 MB (Compact Flash)
System Memory (Default/Max)	128 MB/256 MB	128 MB/256 MB	256 MB/256 MB	256 MB/256 MB
Integrated WIC Slots	2	2	2	3
Onboard AIM Slot	1	1	1	2
Minimum Cisco IOS Release	12.1(14) mainline, 12.2(12) mainline, 12.2(8)T1or later	12.1(14) mainline, 12.2(12) mainline, 12.2(8)T1or later	12.1(14) mainline, 12.2(12) mainline, 12.2(8)T1or later	12.2(8)T1 or later
Onboard LAN Ports	1 to 2 10/100 FE ports	1 to 2 10/100 FE ports	1 to 2 10/100 FE ports	2 10/100 FE ports
Rack Mounting	Yes, 19" and 23" options	Yes, 19" and 23" options	Yes, 19" and 23" options	Yes, 19" and 23" options
Wall Mounting	Yes	Yes	Yes	No

Cisco IOS Software[1]

Most Cisco IOS software CD feature packs for the Cisco 2600 series include several selected Cisco IOS releases. Some configurations will require more than the recommended minimum.

Distribution Part Number	Feature Pack Description
CD26XM-AESK9=	Cisco 2600XM Ser IOS ADV ENT SERVICES Feature Pack
CD26XM-AHK9=	Cisco 2600XM Ser IOS ENT/FW/IDS PLUS IPSEC 3DES Feature Pack
CD26XM-AISK9=	Cisco 2600XM Ser IOS ADV IP SERVICES Feature Pack
CD26XM-AP=	Cisco 2600XM Ser IOS ENT PLUS Feature Pack
CD26XM-APU=	Cisco 2600XM Ser IOS ENT PLUS/H323 MCM Feature Pack
CD26XM-AR1K9=	Cisco 2600XM Ser IOS ENT/SNASW PLUS IPSEC 3DES Feature Pack
CD26XM-AR1P=	Cisco 2600XM Ser IOS ENT/SNASW PLUS Feature Pack
CD26XM-ASK9=	Cisco 2600XM Ser IOS ADV SECURITY Feature Pack
CD26XM-B=	Cisco 2600XM Ser IOS IP/IPX/APPLETALK Feature Pack
CD26XM-BP=	Cisco 2600XM Ser IOS IP/IPX/APPLETALK PLUS Feature Pack
CD26XM-C=	Cisco 2600XM Ser IOS IP Feature Pack
CD26XM-CH=	Cisco 2600XM Ser IOS IP/FW/IDS Feature Pack
CD26XM-CHK9=	Cisco 2600XM Ser IOS IP/FW/IDS PLUS IPSEC 3DES Feature Pack
CD26XM-CP=	Cisco 2600XM Ser IOS IP PLUS Feature Pack
CD26XM-EB=	Cisco 2600XM Ser IOS ENT BASE Feature Pack
CD26XM-ESK9=	Cisco 2600XM Ser IOS ENT SERVICES Feature Pack
CD26XM-IPB=	Cisco 2600XM Ser IOS IP BASE Feature Pack
CD26XM-IPV=	Cisco 2600XM Ser IOS IP VOICE Feature Pack
CD26XM-SPSK9=	Cisco 2600XM Ser IOS SP SERVICES Feature Pack
CD269-AESK9=	Cisco 2691 Ser IOS ADV ENT SERVICES Feature Pack
CD269-AHK9=	Cisco 2691 Ser IOS ENT/FW/IDS PLUS IPSEC 3DES Feature Pack
CD269-AISK9=	Cisco 2691 Ser IOS ADV IP SERVICES Feature Pack
CD269-AP=	Cisco 2691 Ser IOS ENT PLUS Feature Pack

Distribution

Part Number	Feature Pack Description
CD269-APU=	Cisco 2691 Ser IOS ENT PLUS/H323 MCM Feature Pack
CD269-AR1K9=	Cisco 2691 Ser IOS ENT/SNASW PLUS IPSEC 3DES Feature Pack
CD269-AR1P=	Cisco 2691 Ser IOS ENT/SNASW PLUS Feature Pack
CD269-ASK9=	Cisco 2691 Ser IOS ADV SECURITY Feature Pack
CD269-B=	Cisco 2691 Ser IOS IP/IPX/APPLETALK Feature Pack
CD269-BP=	Cisco 2691 Ser IOS IP/IPX/APPLETALK PLUS Feature Pack
CD269-C=	Cisco 2691 Ser IOS IP Feature Pack
CD269-CH=	Cisco 2691 Ser IOS IP/FW/IDS Feature Pack
CD269-CHK9=	Cisco 2691 Ser IOS IP/FW/IDS PLUS IPSEC 3DES Feature Pack
CD269-CP=	Cisco 2691 Ser IOS IP PLUS Feature Pack
CD269-EB=	Cisco 2691 Ser IOS ENT BASE Feature Pack
CD269-ESK9=	Cisco 2691 Ser IOS ENT SERVICES Feature Pack
CD269-IPB=	Cisco 2691 Ser IOS IP BASE Feature Pack
CD269-IPV=	Cisco 2691 Ser IOS IP VOICE Feature Pack
CD269-SPSK9=	Cisco 2691 Ser IOS SP SERVICES Feature Pack
CD26-C-12.0.7=	IP only
CD26-CP-12.0.7=	IP Plus
CD26-CH-12.0.7=	IP/Firewall
CD26-CHL-12.0.7=	IP/Firewall Plus IPSec 56
CD26-CHK2-12.0.7=	IP/Firewall Plus IPSec 3DES
CD26-CK2-12.0.7=	IP Plus IPSec 3DES
CD26-CL-12.0.7=	IP Plus IPSec 56
CD26-B-12.0.7=	IP/IPX/AT/DEC
CD26-BP-12.0.7=	IP/IPX/AT/DEC Plus
CD26-BHP-12.0.7=	IP/IPX/AT/DEC/Firewall Plus
CD26-AP-12.0.7=	Enterprise Plus
CD26-AL-12.0.7=	Enterprise Plus IPSec 56
CD26-AHK2-12.0.7=	Enterprise/Firewall Plus IPSec 3DES
CD26-AHL-12.0.7=	Enterprise/Firewall Plus IPSec 56
CD26-AK2-12.0.7=	Enterprise Plus IPSec 3DES
CD26-E-12.0.7=	Remote Access Server

1. For the complete list of IOS Feature Sets, refer to the parts list, via the URL listed under "For More Information." For users with CCO access, search by IOS feature or release via the *Feature Navigator* at http://www.cisco.com/go/fn

Selected Part Numbers and Ordering Information[1]

Cisco 2600/2600XM Series Router Chassis

1CISCO2610XM	10/100 Ethernet Router w/ Cisco IOS IP
CISCO2610XM-DC	10/100 Ethernet Router w/ Cisco IOS IP - DC
CISCO2610XM-RPS	10/100 Ethernet Router w/ Cisco IOS IP - use w/ ext RPS
CISCO2611XM	Dual 10/100 Ethernet Router w/ Cisco IOS IP
CISCO2611XM-DC	Dual 10/100 Ethernet Router w/ Cisco IOS IP - DC
CISCO2611XM-RPS	Dual 10/100 Ethernet Router w/ Cisco IOS IP - use w/ ext RPS
CISCO2620XM	Mid Performance 10/100 Ethernet Router with Cisco IOS IP
CISCO2620XM-DC	Mid Performance 10/100 Ethernet Router w/Cisco IOS IP-DC
CISCO2620XM-RPS	Mid Performance 10/100 Ethernet Rout w/Cisco IOS IP-RPS ADPT
CISCO2621XM	Mid Performance Dual 10/100 Ethernet Router w/Cisco IOS IP
CISCO2621XM-DC	Mid Performance Dual 10/100 Ethernet Rout w/Cisco IOS IP-DC
CISCO2621XM-RPS	Mid Performance Dual 10/100 Ethernet Rout w/IOS IP-RPS ADPT
CISCO2650XM	High Performance 10/100 Modular Router w/Cisco IOS IP
CISCO2650XM-DC	High Performance 10/100 Modular Rout w/Cisco IOS IP-DC NEBs
CISCO2650XM-RPS	High Performance 10/100 Modular Rout w/Cisco IOS IP-RPS ADPT
CISCO2651XM	High Performance Dual 10/100 Modular Rout with Cisco IOS IP
CISCO2651XM-DC	High Performance Dual 10/100 Modular Rout w/IP-DC NEB
CISCO2651XM-RPS	High Performance Dual 10/100 Mod Rout w/IP-RPS ADPT
CISCO2691	High Performance 10/100 Dual Eth Router w/3 WIC Slots,1 NM
CISCO2691-DC-U	2691 router w/Universal Power Supply 24/48 volts
CISCO2691	High Performance 10/100 Dual Eth Router w/3 WIC Slots/1 NM-RPS ADPT
CISCO2612	1-port 10BASE-T, 1-port TR, 1 network module slot, 1 AIM slot, 2 WIC slots, IP s/w
CISCO2612-DC	1-port 10BASE-T, 1-port TR, 1 network module slot, 1 AIM slot, 2 WIC slots, DC Power, IP s/w
CISCO2612-RPS	1-port 10BASE-T, 1-port TR, 1 network module slot, 1 AIM slot, 2 WIC slots, RPS adapter, IP s/w

Cisco 2600 Series Voice Gateway Bundles

CISCO2651XM-V	CISCO2651XM, AIM-VOICE-30, IOS IP Voice, 128D/32F
CISCO2651XM-V-SRST	CISCO2651XM, FL-SRST-MEDIUM, AIM-VOICE-30, IOS IP Voice, 128D/32F

Cisco 2600 Series VPN Bundles

CVPN2600FIPS/KIT=	KIT (Instructions, labels) to configured 2600 for FIPS
C2651XM-2FE/VPN/K9	2651XM/VPN Bundle, AIM-VPN/BPII/2FE/IOS FW/IPSec 3 DES, 128DRAM
C2621XM-2FE/VPN/K9	2621XM/VPN Bundle, AIM-VPN/BPII/2FE/IOS FW/IPSec 3 DES, 128DRAM
C2611XM-2FE/VPN/K9	2611XM/VPN Bundle, AIM-VPN/BPII/2FE/IOS FW/IPSec 3 DES, 128DRAM
C2691-VPN/K9	2691 VPN Bundle, AIM-VPN/EPII, Plus IOS/FW/IPSEC3DES

Cisco 2600 Series DSL Bundles

CISCO2651XM-ADSL	2651XM-ADSL Bundle, WIC-1ADSL, 2FE, IP Plus, 32F/128DRAM
CISCO2621XM-ADSL	2621XM-ADSL Bundle, WIC-1ADSL, 2FE, IP Plus, 32F/128DRAM
CISCO2611XM-ADSL	2611XM-ADSL Bundle, WIC-1ADSL, 2FE, IP Plus, 32F/128DRAM
CISCO2651XM-SHDSL	2651XM-SHDSL Bundle, WIC-1SHDSL, 2FE, IP Plus, 32F/128DRAM
CISCO2621XM-SHDSL	2621XM-SHDSL Bundle, WIC-1SHDSL, 2FE, IP Plus, 32F/128DRAM
CISCO2611XM-SHDSL	2611XM-SHDSL Bundle, WIC-1SHDSL, 2FE, IP Plus, 32F/128DRAM

Cisco 2600 Series LAN Modules

NM-1E=	1-port 10BASE-T network module
NM-4E=	4-port 10BASE-T network module
NM-1GE	1-port Gigabit Ethernet Network Module (2691 only)

Cisco 2600/3600/3700 Series WAN Interface Cards (WICs)

WIC-1B-S/T=	1-port BRI (S/T) WAN Interface Card (Dial and Leased Line)
WIC-1B-U-V2	1-port BRI (U) w/NT-1 WAN Interface Card (Dial and Leased Line)
WIC-1DSU-56K4=	1-port Serial W/ 4-Wire 56/64Kbps DSU/CSU WAN Interface Card
WIC-1DSU-T1=	1-port Serial w/ FrT1/T1 DSU/CSU WAN Interface Card
WIC-1T=	1-port Serial WAN Interface Card
WIC-2T=	2-port Serial WAN Interface Card
WIC-2A/S=	2-port Async/Sync Serial WAN Interface Card
WIC-1ADSL=	1-port ADSL WAN Interface Card
WIC-1SHDSL=	1-port G.SHDSL WAN Interface Card
WIC-1AM=	1-port Analog Modem WAN Interface Card
WIC-2AM=	2-port Analog Modem WAN Interface Card

Cisco 2600/3600/3700 Series Multiflex Voice and WAN Interface Cards[2]

2VWIC-1MFT-T1=	1-port RJ-48 Multiflex Trunk-T1
VWIC-2MFT-T1=	2-port RJ-48 Multiflex Trunk-T1
VWIC-2MFT-T1-DI=	2-port RJ-48 Multiflex Trunk-T1 With Drop and Insert
VWIC-1MFT-E1=	1-port RJ-48 Multiflex Trunk-E1
VWIC-1MFT-G703=	1-port RJ-48 Multiflex Trunk-G.703
VWIC-2MFT-E1=	2-port RJ-48 Multiflex Trunk-E1
VWIC-2MFT-G703=	2-port RJ-48 Multiflex Trunk-G.703
VWIC-2MFT-E1-DI=	2-port RJ-48 Multiflex Trunk-E1 With Drop and Insert

Cisco 2600/3600/3700 Series Voice/Fax Network Modules and Expansion Modules

NM-1V=	1-slot voice/fax network module
NM-2V=	2-slot voice/fax network module
NM-HDV-FARM-C36	Network Module 36 Port DSP Farm Bundle
NM-HDV-FARM-C54	Network Module 54 Port DSP Farm Bundle
NM-HDV-FARM-C90	Network Module 90 Port DSP Farm Bundle
NM-HDV-1T1-24=	1-port T1 24 channel voice/fax network module
NM-HDV-1T1-24E=	1-port T1 24 enhanced channel voice/fax network module
NM-HDV-2T1-48=	2-port T1 48 channel voice/fax network module
NM-CE-BP-20G-K9=	Content Engine NM-Basic Perf-20GB
NM-CE-BP-40G-K9=	Content Engine NM-Basic Perf-40GB
NM-CE-BP-SCSI-K9=	Content Engine NM-Basic Perf-SCSI Adapter
N-CIDS-K9=	Cisco IDS Network Module, 20-GB IDE hard disk
NM-HDV-1E1-30=	1-port E1 30 channel voice/fax network module
NM-HDV-1E1-30E=	1-port E1 30 enhanced channel voice/fax network module
NM-HDV-2E1-60=	2-port E1 60 channel voice/fax network module
NM-HDV=	High density voice network module, spare (no T1/E1 or DSPs)
NM-HDA-4FXS=	High density analog voice/fax network module with 4 FXS
EM-HDA-8FXS=	8-port FXS voice/fax expansion module
EM-HDA-4FXO=	4-port FXO voice/fax expansion module
DSP-HDA-16	16-channel DSP module for NM-HDA
NM-1FE1R2W	1 10/100 Ethernet 1 4/16 Token-Ring 2 WAN Card Slot NM (2691 only)

Cisco 2600/3600/3700 Series ATM Modules

NM-4T1-IMA=	4-port T1 ATM network module with IMA
NM-4E1-IMA=	4-port E1 ATM network module with IMA
NM-8T1-IMA=	8-port T1 ATM network module with IMA
NM-8E1-IMA=	8-port E1 ATM network module with IMA

Cisco 2600/3600/3700 Series EtherSwitch Modules

| NM-16ESW= | Sixteen 10BaseT/100BaseTX autosensing ports EtherSwitch |
| NM-16ESW-PWR= | Sixteen 10BaseT/100BaseTX autosensing ports EtherSwitch with power daughter card |

Cisco 2600/3600/3700 Series Voice Interface Cards (VICs)

VIC-2E/M=	2-port E&M Voice Interface Card
VIC-2FXO=	2-port FXO Voice Interface Card
VIC-2FXS=	2-port FXS Voice Interface Card
VIC-2DID=	2-port DID Voice/Fax Interface Card
VIC-2FXO-EU=	2-port FXO Voice Interface Card (for Europe)
VIC-2FXO-M3=	2-port FXO Voice Interface Card (for Australia)
VIC-2BRI-S/T-TE=	2-port BRI (S/T user side) Voice Interface Card
VIC-2FXO-M1=	2-port Voice Interface Card-FXO w/ Reversal (for US+)
VIC-2FXO-M2=	2-port Voice Interface Card-FXO w/ Reversal (for EU)

Cisco 2600/3600/3700 Series High-Density Voice/Fax DSP Upgrade Modules

| PVDM-12= | 12-channel Packet Voice/Fax DSP Module |

Cisco 2600/3600/3700 Series WAN Network Modules

NM-4B-S/T=	4-port BRI (S/T) network module
NM-8B-S/T=	8-port BRI (S/T) network module
NM-4B-U=	4-port BRI (U) w/ NT1 network module
NM-8B-U=	8-port BRI (U) w/ NT1 network module
NM-4A/S=	4-port Async/Sync Serial network module
NM-8A/S=	8-port Async/Sync Serial network module
NM-16A=	16-port Async Serial network module
NM-32A=	32-port Async Serial network module
NM-1CT1=	1-port Channelized T1/ISDN-PRI network module
NM-2CT1=	2-port Channelized T1/ISDN-PRI network module
NM-1CT1-CSU=	1-port Channelized T1/ISDN-PRI w/ CSU network module
NM-2CT1-CSU=	2-port Channelized T1/ISDN-PRI w/ CSU network module
NM-1ATM-25=	1-port ATM 25 network module

Cisco 2600/3600/3700 Series Modem Network Modules

| NM-8AM= | 8-port Analog Modem network module |
| NM-16AM= | 16-port Analog Modem network module |

Cisco 2600/3600/3700 Series Network Modules (International)

NM-1CE1B=	1-port Channelized E1/ISDN-PRI balanced network module
NM-1CE1U=	1-port Channelized E1/ISDN-PRI unbalanced network module
NM-2CE1B=	2-port Channelized E1/ISDN-PRI balanced network module
NM-2CE1U=	2-port Channelized E1/ISDN-PRI unbalanced network module

Cisco 2600/3600/3700 Series Modem Management Technology Licenses (MMTL)

| 3MMTL-3600/2600-8= | MMTL for 8 Analog Modems |

Cisco 2600 Series Advanced Integration Modules

AIM-COMPR2=	Data Compression AIM for the Cisco 2600/2600XM series
AIM-COMPR4=	Data Compression AIM for the Cisco 2691/3660/3700 series
AIM-VPN/BP=	DES/3DES VPN Encryption AIM for 2600-Base Performance
AIM-ATM=	ATM SAR Only AIM
AIM-VPN/BPII=	DES/3DES/AES VPN Encryption Module for 2600XM
AIM-ATM-1T1=	High Performance ATM AIM/T1 Bundle AIM-ATM
AIM-ATM-1E1=	High Performance ATM AIM/E1 Bundle AIM-ATM
AIM-VPN/-EP=	DES/3DES VPN Encryption Module for 2600-Enhanced Performance
AIM-VPN/-EPII=	DES/3DES/AES VPN Encryption Module for 2691/3725
AIM-ATM-VOICE-30=	30-Channel T1/E1 Digital Voice Module
AIM-VOICE-30=	SAR and 30-Channel T1/E1 Digital Voice Module

Cisco 2600 Series Factory Memory Options

MEM2691-32CF-EXT	32MB External Compact Flash Memory for the 2691
MEM2691-64CF-EXT	64MB External Cisco Flash Memory for the 2691
MEM2691-128CF-EXT	128MB External Cisco Flash Memory for 2691

Cisco 2600 Series Factory DRAM Memory Upgrades

MEM2600XM-96U128D	96 to 128MB DRAM factory upgrade for Cisco 2600XM
MEM2691-128U192D	128 to 192MB DIMM DRAM factory upgrade for the Cisco 2691
MEM2691-128U256D	128 to 256MB DIMM DRAM factory upgrade for the Cisco 2691

Cisco 2600/2600XM Series Factory Flash Memory Upgrades

MEM2600-8U16FS	8 to 16 MB Flash Factory Upgrade for the Cisco 2600 Series
MEM2600XM-32U48FS	32 to 48MB Flash Factory Upgrade for the Cisco 2600XM
MEM2691-32U128CF	32 to 128MB Cisco 2691 Compact Flash factory upgrade
MEM2691-32U64CF	32 to 64MB Cisco 2691 Compact Flash factory
MEM-CE-256U512D	256MB DRAM Factory Upgrade for NM-CE-BP

Cisco 2600 Series SMARTnet Maintenance

| CON-SNT-PKG5 | Cisco 2600 Series Packaged SMARTnet 8x5xNBD Maintenance |

Cisco 2691 Series Network Modules

NM-1GE=	1 Port GE Network Module
NM-1T3/E3=	One port T3/E3 network module

1. This is only a small subset of all parts available via URL listed under "For More Information". Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the *Distribution Product Reference Guide* at: http://www.cisco.com/dprg (limited country availability).
2. VoIP and VoFR require use of a Voice/Fax network module

For More Information

See the Cisco 2600 Series Web site: **http://www.cisco.com/go/2600**

Cisco 3800 Series

The Cisco 3800 Series is the flagship platform in a portfolio of next-generation routers that integrate advanced technologies, adaptive services, and secure enterprise communications.

These new routers offer the performance and reliable packet delivery necessary to efficiently deliver mission-critical network capabilities, including real-time applications such as voice over IP (VoIP), business video, and collaborative communications. Architectural enhancements include embedded security processing, significant platform performance and memory improvements, and new high-density interface types. These design achievements complement the Cisco IOS® Software features and superior investment protection that this platform inherits from the Cisco 3700 Series.

The Cisco 3800 Series, comprised of the Cisco 3825 and Cisco 3845, serves as a catalyst for midsize organizations and enterprise branch offices that want to gracefully scale their enterprise edges and take advantage of converged business services, while minimizing the cost and complexity of network upgrades.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco 3825	• Medium sized to large branch offices and businesses with the ability to support concurrent data, security, voice, and advanced services at wire speed up to ½ T3/E3 rates
	• Two onboard 10/100/1000, 4 HWIC slots and one SFP port
	• Low density (up to 18 ports), integrated 10/100 switching with PoE support; up to 48-ports with Cisco Inline Power
	• Integrated onboard security acceleration for IPSec for improved IPSec performance and an integral part of Cisco Self Defending Network, which enable network device protection, threat defense, secure connectivity, and endpoint protection and control
	• Up to four Integrated PVDMs slots, industry-leading call processing and autoattendant solutions, and high-density voice cards and modules that speed IP Communications and give customers a choice of telephony interface devices
Cisco 3845	Same features as above plus:
	• Medium sized to large branch offices and businesses providing the highest performance and densities for concurrent data, security, voice, and advanced services with the ability to run at wire-speed up to T3/E3
	• 4 Enhanced Network Module slots
	• Higher availability and resiliency, such as redundant system and inline power, online insertion and removable (OIR) components, and field replaceable components such as the cpu motherboard and fan assembly

Key Features

- Cisco IOS Software Firewall—Stateful, application-based filtering (context-based access control); Per-user authentication and authorization; Real-time alerts; Transparent firewall; IPv6 firewall
- VPN—Data Encryption Standard (DES), Triple DES (3DES), and Advanced Encryption Standard (AES) 128, 192, and 256 cryptology support; Embedded hardware-based VPN acceleration on the motherboard; Support for optional higher-performance AIM-based security acceleration with Layer 3 compression; Support for up to 1800 tunnels with VPN Module; Cisco Easy VPN remote and server support; DMVPN
- Multiprotocol Label Switching (MPLS) VPN support—Specific provider edge capabilities; Virtual routing and forwarding (VRF) firewall and VRF IPSec
- Onboard USB 1.1 port(s)—Future support for secure token and Flash memory
- Intrusion prevention system (IPS)—More than 700 IPS signatures supported in Cisco IOS Software, with the ability to load and enable selected IPS signatures; More than 1000 IPS signatures with optional high-performance IDS Network Module
- URL filtering—Onboard with an optional content-engine network module; Local URL filtering in Cisco IOS Software based on external server
- Cisco Router and Security Device Manager (SDM)—Comes standard on all Cisco 3800 Series routers
- IP phone support—Optional integrated power supply with inline power; 802.3af support—360W of inline power
- Analog voice support—Up to 88 FXS and 56 FXO ports; Digital voice support—Up to 720 calls; Packet voice digital signal processor (DSP) module (PVDM) slots on motherboard—4 PVDM slots on motherboard; Local conferencing and transcoding;
- Cisco CME—Up to 240 phones; SRST—Up to 720 phones
- Voice mail—Up to a 100 mailboxes using Cisco Unity™ Express network module
- Voice interfaces—FXS, FXO, Direct Inward Dial (DID), E&M, Centralized Automated Message Accounting (CAMA), Basic Rate Interface (BRI), T1, E1, J1, Primary Rate Interface (PRI), Q.SIG, channel associated signaling (CAS)

Specifications

Feature	Cisco 3825	Cisco 3845
Network Module Slots	2	4
Advanced Integration Module (AIM) Slots	2	Same As Cisco 3825
High speed WAN Interface Card (HWIC) Slots	4	Same As Cisco 3825
10/100/1000 GE Ports	2	Same As Cisco 3825
Small Form Pluggable (SFP) ports	1	Same As Cisco 3825
Onboard PVDM slots	4	Same As Cisco 3825
WAN Network Modules	Yes	Same As Cisco 3825
ATM AIM Modules	Yes	Same As Cisco 3825
Voice/Fax Network Modules	Yes	Same As Cisco 3825
WAN Interface Card (WIC) Modules	Yes	Same As Cisco 3825
Multiflex Voice/WAN Interface Cards	Yes	Same As Cisco 3825
Voice Interface Card (VIC) Modules	Yes	Same As Cisco 3825
Modem Modules	Yes	Same As Cisco 3825

Feature	Cisco 3825	Cisco 3845
EtherSwitch Modules	Yes, HWIC and Network Modules	Same As Cisco 3825
Performance with Services	Up to 14 T1/E1ís	Up to T3
VPN/Security Advanced Integration Modules (AIM)	Yes, EPII-Plus	Yes, HPII-Plus
Content Engine Network Modules	Yes	Same As Cisco 3825
Flash Memory (External)	64 MB (default) -256 MB (optional)	Same As Cisco 3825
DRAM Memory	256 MB (default)	Same As Cisco 3825
	1024 MB (max)	Same As Cisco 3825
Power Supply	AC, AC +POE, DC, external redundant AC	AC, DC, internal redundant AC + POE
Dimensions (HxWxD)in.	3.5 x 17.1 x 14.7 in.	5.25 x 17.25 x 16 in.

Selected Part Numbers and Ordering Information[1]

Cisco 3800 Series Integrated Services Routers

CISCO3825	Cisco 3825 Integrated Services Router with 2 Gigabit Ethernet, 1 SFP, 2 NME, 4 HWIC, 2 AIM, Cisco IOS IP Base software, and AC power
CISCO3825-AC-IP	Cisco 3825 Integrated Services Router with 2 Gigabit Ethernet, 1 SFP, 2 NME, 4 HWIC, 2 AIM, Cisco IOS IP Base software, AC Power, and PoE
CISCO3825-DC	Cisco 3825 Integrated Services Router with 2 Gigabit Ethernet, 1 SFP, 2 NME, 4 HWIC, 2 AIM, Cisco IOS IP Base software, and DC power
CISCO3845	Cisco 3845 Integrated Services Router with 2 Gigabit Ethernet, 1 SFP, 4 NME, 4 HWIC, 2 AIM, Cisco IOS IP Base software, and AC power
CISCO3845-AC-IP	Cisco 3845 Integrated Services Router with 2 Gigabit Ethernet, 1 SFP, 4 NME, 4 HWIC, 2 AIM, Cisco IOS IP Base software, AC Power, and PoE

Cisco 3800 Series Voice and Security Bundles

|	
CISCO3845-V3PN/K9	Cisco 3845 V3PN Bundle with IOS Advanced IP Services, PVDM2-64, AIM-VPN/HPII-PLUS, FL-CCME (240 users), 64 MB Flash/256 MB DRAM
CISCO3825-V3PN/K9	Cisco 3825 V3PN Bundle with IOS Advanced IP Services, PVDM2-64, AIM-VPN/EPII-PLUS, FL-CCME (168 users), 64 MB Flash/256 MB DRAM
CISCO3845-V/K9	Cisco 3845 Voice Bundle with IOS SP Services, PVDM2-64, 64 MB Flash/256 MB DRAM
CISCO3845-SRST/K9	Cisco 3845 Voice Bundle with IOS SP Services, PVDM2-64, FL-SRST (240 users), 64 MB Flash/256 MB DRAM
CISCO3845-CCME/K9	Cisco 3845 Voice Bundle with IOS SP Services, PVDM2-64, FL-CCME (240 users), 64 MB Flash/256 MB DRAM
CISCO3825-V/K9	Cisco 3825 Voice Bundle with IOS SP Services, PVDM2-64, 64 MB Flash/256 MB DRAM
CISCO3825-SRST/K9	Cisco 3825 Voice Bundle with IOS SP Services, PVDM2-64, FL-SRST (168 users), 64 MB Flash/256 MB DRAM
CISCO3825-CCME/K9	Cisco 3825 Voice Bundle with IOS SP Services, PVDM2-64, FL-CCME (168 users), 64 MB Flash/256 MB DRAM
CISCO3845-SEC/K9	Cisco 3845 Security Bundle with IOS Advanced Security, 64MB Flash/256 MB DRAM
CISCO3845-HSEC/K9	Cisco 3845 Security Bundle with IOS Advanced IP Services, AIM-VPN/HPII Plus, 64MB Flash/256 MB DRAM
CISCO3825-SEC/K9	Cisco 3825 Security Bundle with IOS Advanced Security, 64MB Flash/256MB DRAM
CISCO3825-HSEC/K9	Cisco 3825 Security Bundle with IOS Advanced IP Services, AIM-VPN/EPII Plus, 64MB Flash/256 MB DRAM

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the Distribution Product Reference Guide at: http://www.cisco.com/dprg (limited country availability).

For More Information

See the Cisco 3800 Series Web site: **http://www.cisco.com/go/ISR**

Cisco 3700 Series

The Cisco 3700 Series of modular routers enable flexible and scalable deployment of new applications in an integrated branch office access platform. The Cisco 3700 Series is ideal for sites and solutions requiring the highest levels of integration at the branch for IP Telephony, and integrated flexible routing with low-density switching solutions. Integrated security, intrusion detection, and VPN protect the network at the perimeters, while integrated caching conserves WAN bandwidth. The Cisco 3700 Series provides a consolidated service infrastructure and high service density in a compact form factor that enables the incremental incorporation of branch applications.
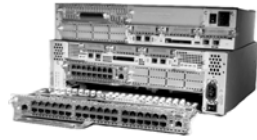
When to Sell

Sell This Product	When a Customer Needs These Features

Cisco 3725	• New levels of branch office service density in a compact form factor (2RU)
	• Integrated Security, intrusion detection, and VPN
	• Integrated flexible routing and low-density switching (16-or-36 ports)
	• Flexible incremental and scalable migration to a voice/data converged branch office network
	  – Compatibility with more than 90% of the world's legacy analog and digital TDM PBXs
	  – Survivable Remote Site Telephony (SRST) features that enable centralized call processing with local branch IP Telephony redundancy
	  – Inline power for IP Telephony
	• Content Networking and Caching integrated for WAN bandwidth conservation

Cisco 3745	Same features as above plus: • New levels of branch office service density in a compact form factor (3RU) • Availability features such as redundant power, online insertion and removable components, and field replaceable components • Increased performance and density

Key Features

- Optimized for multiple high density services, such as voice and security
- Versatile High Density Service Module (HDSM) supports the 36-port EtherSwitch Network Module
- Integrated connectivity options free up network module slots
- Optional features enhance availability/resiliency (3745 only): internal redundant power, hot-swappable modules, and field-serviceable components
- Optimized for Integrated IP Telephony: IP phone powered switch, high density voice gateway, flexible WAN routing, Survivable Remote Site Telephony, and Cisco Call Manager Express
- Flexible combination of analog and/or digital voice with scalable port density
- Full support for Cisco IOS voice suite of features
- Platforms performance-tuned for scaling packet voice solutions, security and content
- Integrated switching modules (16- and 36-port)
- Optimized for security and VPN deployments with IPSec VPN, stateful Cisco IOS Firewall, and full-featured intrusion detection
- Simplified management from a single platform for ease of configuration, deployment, and troubleshooting
- Integrated inline power for wireless access points and IP phones
- Gigabit Ethernet connectivity

Specifications

Feature	Cisco 3725	Cisco 3745
Network Module Slots	2	4
Advanced Integration Module (AIM) Slots	2	2
WAN Interface Card (WIC) Slots	3	3
10/100 FE Ports	2	2
WAN Modules	See Part Numbers and Ordering Information	See Part Numbers and Ordering Information
ATM Modules	See Part Numbers and Ordering Information	See Part Numbers and Ordering Information
Voice/Fax Network Modules	See Part Numbers and Ordering Information	See Part Numbers and Ordering Information
WAN Interface Card (WIC) Modules	See Part Numbers and Ordering Information	See Part Numbers and Ordering Information
Multiflex Voice/WAN Interface Cards	See Part Numbers and Ordering Information	See Part Numbers and Ordering Information
Voice Interface Card (VIC) Modules	See Part Numbers and Ordering Information	See Part Numbers and Ordering Information
Modem Modules	See Part Numbers and Ordering Information	See Part Numbers and Ordering Information
EtherSwitch Modules	See Part Numbers and Ordering Information	See Part Numbers and Ordering Information
Performance	100 kpps	225 kpps
VPN/Security Advanced Integration Modules (AIM)	See Part Numbers and Ordering Information	See Part Numbers and Ordering Information
Content Network Modules	See Part Numbers and Ordering Information	See Part Numbers and Ordering Information
Flash Memory	32 MB (default); 128 MB (max)	32 MB (default); 128 MB (max)
Flash Memory (External)	32 MB -128 MB (optional)	32 MB -128 MB (optional)
DRAM Memory	256 MB (default) 256 MB (max)	256 MB (default) 256 MB (max)
Power Supply	AC, DC, external redundant AC	AC, DC, internal redundant AC
Dimensions (HxWxD)	3.5 x 17.25 x 14.7 in.	5.25 x 17.25 x 15 in.

Selected Part Numbers and Ordering Information[1]

Cisco 3700 Series Modular Multiservice Access Router

CISCO3725	2-slot Modular Multiservice Router with IP Software
CISCO3745	4-slot Modular Multiservice Router with IP Software

Serial Network Modules

NM-4A/S	4-port async/sync serial network module
NM-8A/S	8-port async/sync serial network module
NM-16A/S	16-port async/sync serial network module
NM-1HSSI	1-port high speed serial interface module
NM-1T3/E3	1-port clear channel T3/E3 network module

Asynchronous Network Modules

NM-16A	16 Async Ports network module
NM-32A	32 Async Ports network module

LAN Network Modules and Mixed-Media LAN & WAN Network Modules

NM-2W	2 WAN Card Slot Network Module (no LAN)
NM-1FE2W-V2	1 10/100 Ethernet 2 WAN Card Slot Network Module
NM-1FE1R2W	1 10/100 Ethernet 1 4/16 Token Ring 2 WAN Card Slot NM
NM-2FE2W-V2	2 10/100 Ethernet 2 WAN Card Slot Network Module
NM-1FE-FX-V2	1-port Fast Ethernet network module (10/100Base Fiber only)
NM-1GE	1 port GE network module

Digital Packet Voice and Fax Trunk Modules

NM-HDV-1T1-12	High Density Voice Network Module, with 1 VWIC-1MFT-T1 and 1 PVDM-12
NM-HDV-1E1-12	High Density Voice Network Module, with 1 VWIC-1MFT-E1 and 1 PVDM-12
NM-HDV-1E1-30	Single-port, 30-channel E1 voice/fax Network Module (supports 30 channels) of medium complexity VoCoders: G.729a/b, G.726, G.711 and fax or 12 channels of G.726, G.729, G.723.1, G.728, G.729a/b, G.711 and fax)
NM-HDV-1E1-30E	Single-port, enhanced 30-channel E1 voice/fax Network Module (supports 30 channels of high and medium complexity VoCoders: G.729a/b, G.726, G.729, G.728, G.723.1, G.711 and fax)
NM-HDV-2E1-60	Dual-port, 60-channel E1 voice/fax Network Module (supports 60 channels) of medium complexity VoCoders: G.729a/b, G.726,G.711and fax or 30channels of G726, G729, G723.1, G.728, G729a/b, G711 and fax) Supports add/drop multiplexing (drop and insert)
NM-HDV-1T1-24	Single-port, 24-channel T1 voice/fax Network Module (supports 24 channels of medium complexity VoCoders: G.729a/b, G.726, G.711 and fax or 12 channels of G.726, G.729, G.723.1, G.728, G.729a/b, G.711 and fax)
NM-HDV-1T1-24E	Single-port, enhanced 24-channel T1 voice/fax Network Module (supports 24 channels of high and medium complexity VoCoders: G.729a/b, G.726, G.729, G.728, G.723.1, G.711 and fax)
NM-HDV-2T1-48	Dual-port, 48-channel T1 voice/fax Network Module (supports 48 channels) of medium complexity VoCoders:G.729a/b,G.726,G.711and fax or 24 channels of G726, G729, G723.1, G.728, G729a/b, G711 and fax) Supports add/drop multiplexing (drop and insert)

AIM-ATM-VOICE-30 SAR and 30 Channel T1/E1 Digital Voice module

AIM-VOICE-30	30 Channel T1/E1 Digital Voice module

Analog Packet Voice and Fax Trunk Network Modules

NM-1V	1-slot voice and fax network module
NM-2V	2-slot voice and fax network module
NM-HDA	High Density Analog Module
NM-HD-1V	One-slot IP Communications Voice/Fax Network Module
NM-HD-2V	Two-slot IP Communications Voice/Fax Network Module
NM-HD-2VE	Two-slot IP Communications Enhanced Voice/Fax Network Module

Voice Interface Cards

VIC-2FXS	2-port voice interface card-FXS
VIC-2FXO	2-port voice interface card-FXO
VIC-2FXO-EU	2-port voice interface card-FXO (for Europe)
VIC-2FXO-M1	2-port voice interface card-FXO (with battery reversal, for North America)
VIC-2FXO-M2	2-port voice interface card-FXO (with battery reversal, for Europe)
VIC-2FXO-M3	2-port voice interface card-FXO (for Australia)
VIC-2E/M	2-port voice interface card-E&M
VIC-2DID	2-port voice interface card-DID (Direct Inward Dial)
VIC-2BRI-S/T-TE	2-port voice interface card-BRI (Terminal side)
VIC-2BRI-NT/TE	2-port voice interface card-BRI (Network side)
VIC2-2FXS	Two-port Voice Interface Card - FXS
VIC2-2FXO	Two-port Voice Interface Card - FXO (Universal)
VIC2-4FXO	Four-port Voice Interface Card - FXO (Universal)
VIC2-2E/M	Two-port Voice Interface Card - EandM
VIC2-2BRI-NT/TE	Two-port Voice Interface Card - BRI (NT and TE)
VIC-4FXS/DID	4 port FXS or DID VIC

ATM Network Modules

NM-4T1-IMA	4-port T1 ATM network module with Inverse Multiplexing over ATM (IMA)
NM-4E1-IMA	4-port E1 ATM network module with IMA
NM-8T1-IMA	8-port T1 ATM network module with IMA
NM-8E1-IMA	8-port E1 ATM network module with IMA
NM-1A-T3	1-port DS3 ATM network module
NM-1A-E3	1-port E3 ATM network module
NM-1A-OC3MM	1-port ATM OC3 Multimode NM for 2691, 3600 and, 3725
NM-1A-OC3SMI	1-port ATM OC3 Singlemode Inter Reach NM for 2691, 3600 and, 3725
NM-1A-OC3SML	1-port ATM OC3 Singlemode Ling Reach NM for 2691, 3600 and, 3725
NM-1A-OC3MM-EP	1-port ATM OC3 Multimode NM for 3745
NM-1A-OC3SMI-EP	1-port ATM OC3 Singlemode Inter Reach NM for 3745
NM-1A-OC3SML-EP	1-port ATM OC3 Singlemode Ling Reach NM 3745
AIM-ATM	ATM cell processing module

Serial WAN Interface Cards

WIC-1DSU-T1-V2	One T1 CSU/DSU - Integrated
WIC-2T	2-port High Speed Serial
WIC-2-A/S	2-port Async/Sync Serial
WIC-1DSU-56K4	1-port, four-wire 56/64-Kbps with CSU/DSU

Digital Voice/WAN Interface Cards

VWIC-1MFT-T1	1-port RJ-48 MultiFlex Trunk-T1
VWIC-2MFT-T1	2-port RJ-48 MultiFlex Trunk-T1
VWIC-2MFT-T1-DI	2-port RJ-48 MultiFlex Trunk-T1 with Drop and Insert
VWIC-1MFT-E1	1-port RJ-48 MultiFlex Trunk-E1
VWIC-2MFT-E1	2-port RJ-48 MultiFlex Trunk-E1
VWIC-2MFT-E1-DI	2-port RJ-48 MultiFlex Trunk-E1 with Drop and Insert Add not for VWICs VIC slots & WIC slots
VWIC-1MFT-G703	1-port RJ-48 MultiFlex Trunk-E1 unstructured
VWIC-2MFT-G703	2-port RJ-48 MultiFlex Trunk-E1 unstructured

ISDN WAN Interface Cards

WIC-1B-S/T	1-port ISDN BRI
WIC-1B-U-V2	1-port ISDN BRI with NT1

ISDN and Channelized Serial Network Modules

NM-1CE1T1-PRI	1-Port Channelized E1/T1/ISDN-PRI Network Module
NM-2CE1T1-PRI	2-Port Channelized E1/T1/ISDN-PRI Network Module
NM-4B-S/T	4-port ISDN BRI network module
NM-4B-U	4-port ISDN BRI with NT1 network module
NM-8B-S/T	8-port ISDN BRI network module (S/T interface)
NM-8B-U	8-port ISDN BRI with NT1 network module (U interface)

Modem Modules

WIC-1AM	1-port analog modem WAN interface card (WIC)
WIC-2AM	2-port analog modem WAN interface card (WIC)
NM-6DM	6-port digital modem network module
NM-12DM	12-port digital modem network module
NM-18DM	18-port digital modem network module
NM-24DM	24-port digital modem network module
NM-30DM	30-port digital modem network module
NM-8AM	8-port analog modem Network Module
NM-16AM	16-port analog modem Network Module

Digital Subscriber Line (DSL)

WIC-1ADSL	1-port ADSL WAN Interface Card
WIC-1ADSL-DG	1-port ADSLoISDN Wan Interface Card
WIC-G.SHDSL	1-port G.shdsl WAN Interface Card

Encryption Advanced Integration Modules

AIM-COMPR4	Data Compression AIM for 3660 Series (4 E1 performance)
AIM-VPN/HPII	DES/3DES/AES VPN Encryption/Compression Module for 3660/3745
AIM-VPN/EP II	DES/3DES/AES VPN Encryption/Compression Module for 2691/3725

Content Engine Network Modules

NM-CE-BP-20G-K9	Content Engine Network Module, Basic Performance, 20GB IDE Hard Disk
NM-CE-BP-40G-K9	Content Engine Network Module, Basic Performance, 40GB IDE Hard Disk
NM-CE-BP-SCSI-K9	Content Engine Network Module, Basic Performance, SCSI Controller

Dry Contact Closure Alarm NM

NM-AIC-64	Alarm Monitoring and Control Network Module

Cisco EtherSwitch Modules

NM-16ESW	One 16-Port 10/100 EtherSwitch Network Module
NM-16ESW-PWR	One 16 port 10/100 EtherSwitch NM with Inline Power support
NM-16ESW-1GIG	One 16 port 10/100 EtherSwitch NM with 1 GE (1000BaseT) port
NM-16ESW-PWR-1GIG	One 16 port 10/100 EtherSwitch NM with Inline Power and GE
PPWR-DCARD-16ESW	One Inline power daughter card for 16 port EtherSwitch NM
NMD-36-ESW	One 36 port 10/100 EtherSwitch High Density Service Module
NMD-36-ESW-PWR	One 36 port 10/100 EtherSwitch HDSM with Inline Power
NMD-36-ESW-2GIG	One 36 port 10/100 EtherSwitch HDSM with two GE (1000BaseT)
NMD-36-ESW-PWR-2G	One 36 port 10/100 EtherSwitch HDSM + Inline Power and two GE
PPWR-DCARD-36ESW	One Inline Power daughter card for 36 port EtherSwitch HDSM
GE-DCARD-ESW	One GE (1000BaseT) daughter card for EtherSwitch Modules
PPWR-PS-360W	One 48V (360W) power supply for EtherSwitch Modules
PPWR-PS-CHASSIS	One power supply chassis for Cisco 48V (360W) power supply
PWR-CHASSIS-360W	One power supply chassis and 48V power supply for EtherSwitch
CAB-PPWR-PS1-1	Connects one EtherSwitch power supply to one EtherSwitch Module
CAB-PPWR-PS1-2	Connects one EtherSwitch power supply to two EtherSwitch Modules
CAB-PPWR-PS2-1	Connects two EtherSwitch power supplies to one EtherSwitch Module

Intrusion Detection Network Module

NM-CIDS-K9	Intrusion Detection System Network Module

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the Distribution Product Reference Guide at: http://www.cisco.com/dprg (limited country availability).

For More Information

See the Cisco 3700 Series Web site: **http://www.cisco.com/go/3700**

Cisco 7200 Series

The Cisco 7200 Series routers deliver exceptional price/performance, versatility, and feature-richness in a compact form factor. The Cisco 7200 is ideal as a WAN aggregator for the Service Provider (small POP) or enterprise edge, an enterprise WAN gateway, a high-end managed CPE, or as a small core router. With the hardware supported IPsec encryption module as well as robust firewall and VRF aware IPSec/NAT support, the Cisco 7200 is ideal for integrated security service. The platform also supports sites that require IBM data center connectivity as well as multifunction capabilities that combine all the above for multiservice voice, video, and data traffic.

A key strength of the Cisco 7200 is its modularity. With a choice of 4- and 6-slot chassis, a selection of processors providing up to 1 Mpps, an extensive range of LAN and WAN interfaces with up to 48 ports per chassis, and single or dual power supplies, the customer can customize their system to achieve the performance, connectivity, and capacity desired. This modularity combined with a low initial price point guarantees both investment protection and maximum return on investment, allowing the customer to upgrade and/or redeploy their Cisco 7200 as their network needs change.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco 7204VXR	• 4-slot chassis • Modular processor: 225, 400, or 1 Mpps (NPE-225, NPE-400, NPE-G1) • 1.2 Gbps backplane • MIX-enabled bus for data/voice/video applications
Cisco 7206VXR	• 6-slot chassis • Modular processor: 225, 400, or 1 Mpps (NPE-225, NPE-400, NPE-G1) • 1.2 Gbps backplane • MIX-enabled bus for data/voice/video applications

Key Features

- Compact Form Factor—Up to six port adapters in a fully modular 3RU form factor.
- Exceptional Value—As the most powerful single-processor platform, the Cisco 7200 offers customers a superior price/performance ratio supporting high-speed media and high-density configurations with up to 1 million packets per second processing at a competitive price point
- Feature Rich—Full support for Cisco IOS software and enhancements for high-performance network services; offers industry-leading network services, including: MPLS, broadband aggregation, quality of service (QoS), Service Management router, IBM data center, Storage Area Network application, security, and voice/video/data support
- Connectivity/Flexibility—Provides high port density and an extensive range of LAN and WAN media, the Cisco 7200 dramatically reduces the cost per port and allows for flexible configurations to meet your specific network needs
- Common port adapters—Port adapters are shared with the Cisco 7300, 7400, 7500, and 7600 (w/FlexWAN Module), which simplifies sparing and protects customer investment in interfaces

Competitive Products

• Redback: SMS-500, SMS-1800	• Juniper: ERX700, ERX1400
• Juniper: M5, M10, M7i, M10i	

Specifications

Feature	Cisco 7204VXR	Cisco 7206VXR
Fixed Ports	None	Same as 7204VXR
Expansion Slots	4	6
WAN Port Adapters	DS0 to OC-12	Same as 7204VXR
Processor	RM7K RISC Processor	Same as 7204VXR
Forwarding Rate	Up to 1 Mpps	Same as 7204VXR
Backplane Capacity	1.2 Gbps	Same as 7204VXR
Flash PCMCIA Memory	48 MB (expandable to 256 MB)	Same as 7204VXR
System DRAM Memory	128 MB (expandable to 1 GB)	Same as 7204VXR
Minimum Cisco IOS Release	12.0(1)XE	Same as 7204VXR
Internal Power Supply	AC or DC, dual option	Same as 7204VXR
Redundant Power Supply	Yes, for AC or DC	Same as 7204VXR
Chassis Height	3 RU	Same as 7204VXR
Rack Mountable	Yes, up to 16 per rack	Same as 7204VXR
Dimensions (HxWxD)	5.25 x 16.8 x 17 in.	Same as 7204VXR

Cisco IOS Software and Memory Requirements[1]

To run the Cisco IOS Feature Packs, you need, at a minimum, the amount of memory shown in the following table. Some configurations will require more.

Distribution Part Number	Feature Pack Description	IOS Image Release	Flash Memory Required	DRAM Memory Required
CD72-C-12.3T=	IP	12.3T	16MB	64MB
CD72-CK2-12.1E=	IP IPSEC 3DES	12.1E	16MB	64MB
CD72-CHK2-12.3T=	IP/FW/IDS IPSEC 3DES	12.3T	16MB	64MB
CD72-A-12.3T=	Enterprise	12.3T	16MB	64MB

1. For the complete list of IOS Feature Sets, refer to the parts list, via the URL listed under "For More Information." For users with CCO access, search by IOS feature or release via the *Feature Navigator* at http://www.cisco.com/go/fn

Selected Part Numbers and Ordering Information[1]

Cisco 7204 Chassis
CISCO7204VXR	Cisco 7204VXR, 4-slot chassis, 1 AC Supply w/IP Software
CISCO7204VXR/225	7204VXR Bundle with NPE-225 and I/O Controller with 2 FE/E

Cisco 7206 Chassis
CISCO7206VXR	Cisco 7206VXR, 6-slot chassis, 1 AC Supply w/IP Software
C7206VXR/400/2FE	7206VXR with NPE-400 and I/O Controller with 2 FE/E Ports
C7206VXR/400/GE	7206VXR with NPE-400 and GE+E I/O controller
7206VXR/NPE-G1	7206VXR with NPE-G1 processing engine

Cisco 7200 Voice Bundles
C7206VXR/VOICE/400	7206VXR w/ NPE-400, Voice PA-VXC-2TE1+, I/O contlr w/ 2FE

Cisco 7200 VPN Bundle
7204VXR225/VPNK9	7204VXR VPN Bundle NPE225, 128MB, I/O 2FE, VAM
7206VXR400/VPNK9	7206VXR VPN Bundle NPE400,256MB, I/O 2FE, VAM
7206VXRG1/VPNK9	7206VXR VPN Bundle NPE-G1,256MB, 3 FE/GE, VAM
7206VXRG1/2VPNK9	7206VXR VPN Bundle NPE-G1, 256MB, 3 FE/GE, VAM2
7206VXR400/2VPNK9	7206VXR VPN Bundle NPE400,256MB, I/O 2FE,VAM2

Cisco 7200 Series Processors
NPE-G1=	Cisco 7200 Network Processing Engine NPE-G1 including 256MB default DRAM and 64MB default flash memory.
NPE-225=	Network Processing Engine 225 (128MB default memory)-spare
NPE-400=	7200VXR NPE-400 (128MB default memory),SPARE

Cisco 7200 Series Input/Output Controller
C7200-I/O=	Cisco 7200 Input/Output Controller, Spare
C7200-I/O-2FE/E=	Cisco 7200 Input/Output Controller with Dual 10/100 Ethernet
C7200-I/O-GE+E=	Cisco 7200 Input/Output Controller with GE and Ethernet

Cisco 7200 Processor Memory: NPE-G1

MEM-NPE-G1-256MB=	Two 128MB memory modules (256MB total) for the Cisco 7200 Network Processing Engine NPE-G1
MEM-NPE-G1-512MB=	Two 256MB memory modules (512MB total) for the Cisco 7200 Network Processing Engine NPE-G1
MEM-NPE-G1-1GB=	Two 512MB memory modules (1GB total) for the Cisco 7200 Network Processing Engine NPE-G1
MEM-NPE-G1-FLD64=	64MB Compact Flash Disk for the Cisco 7200 Network Processing Engine NPE-G1
MEM-NPE-G1-FLD128=	128MB Compact Flash Disk for the Cisco 7200 Network Processing Engine NPE-G1
MEM-NPE-G1-FLD256=	256MB Compact Flash Disk for the Cisco 7200 Network Processing Engine NPE-G1
MEM-SD-NPE-256MB=	2 128MB memory modules (256MB total) for the NPE-300 in 7200

Cisco 7200 Processor Memory: NPE-225

MEM-SD-NPE-128MB=	128MB Memory Upgrade Kit for NPE-300/NPE-225/NPE-175

Cisco 7200 Processor Memory: NPE-400

MEM-NPE-400-128MB=	128MB Memory for NPE-400 in 7200 Series
MEM-NPE-400-256MB=	256MB Memory for NPE-400 in 7200 Series
MEM-NPE-400-512MB=	512MB Memory for NPE-400 in 7200 Series

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco 7200 Series Web site: **http://www.cisco.com/go/7200**

Cisco 7300 Series

The Cisco 7300 Series Routers are optimized for flexible, high performance IP/MPLS services at the network edge, where service providers and enterprises link together.

The Cisco 7304 Series Router is ideally applied as a high-end CPE or as an Internet Gateway router. Architected for network High Availability and multi-protocol support, the 7304 supports the broad set of existing Cisco 7000 Series Port Adapters with the Cisco 7304 Port Adapter Carrier Card.

The Cisco 7301 Series Router is a compact single rack unit router coupled with a broad set of interfaces and Cisco IOS software features. It packs high performance in a space and power efficient form factor that includes a single 7000 Series port adapter slot, 3 on-board Gigabit Ethernet (copper or optical)/Fast Ethernet ports and a new high-speed bus technologies.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco 7301	• Compact, power efficient 1RU form factor • Three times the performance increase over existing single rack unit routers like the Cisco 7401 • Single 7000 Series Port Adapter Slot
Cisco 7304	• Highly modular price and performance optimized platform, rich in IP services • High performance connectivity—DS-1 through OC48/STM16 with 3.5 Mpps performance • Built-in Gigabit Ethernet connectivity • Multiprotocol routing: IP, IPX, AppleTalk, DLSw • Compact size, high availability and optimal cooling

Key Features

- Cisco 7301: With nearly 1 million-packets-per-second (Mpps) processing performance, the fastest Cisco 1RU general-purpose processor, as of October 2003; 3 fixed 10/100/1000-Mbps ports (RJ-45 or SFP optics) directly on the processor; Full Cisco IOS feature support; Pluggable Gigabit Ethernet optics (SFPs); Up to 1GB of available DRAM; Up to 256MB of removable compact flash memory; Front-back airflow and single sided management

- Cisco 7304: Compact modular form factor with four RU with four port adapter slots per chassis; PXF IP processor hardware-accelerated services such as Cisco Express Forwarding (CEF), NetFlow v8, and Turbo ACL; Offers up to 3.5Mpps performance for PXF-accelerated services with the NSE-100 Network Services Forwarding Engine; Two Gigabit Ethernet ports per NSE-100; System redundancy: optional dual processors and dual AC or DC power supplies increases network availability

Competitive Products

- Redback: SMS-500, SMS-1800
- Juniper: M5, M10
- Juniper: ERX700, ERX1400

Specifications

Feature	Cisco 7301	Cisco 7304
Fixed Ports	Three Gigabit Ethernet ports	Same as 7301
Expansion Slots	1	4
WAN Interface Range	DS-1 to OC-3	DS-1 to OC-48
Processor	RM 7000 MIPS Processor + PXF Processor	RM 7000 MIPS Processor + PXF Processor
Forwarding Rate	Up to 1 Mpps	Up to 3.5 Mpps
Backplane Capacity	1.2 Gbps	16 Gbps
Flash PCMCIA Memory	64 MB (expandable to 128 MB)	Same as 7301
System DRAM Memory	128 MB (expandable to 512 MB)	Same as 7301
Minimum Cisco IOS Release	12.2(11)YZ	12.1(9)EX
Internal Power Supply	AC or DC	Same as 7301
Redundant Power Supply Support	Yes, for AC or DC	Same as 7301
Chassis Height	1 RU	4 RU
Rack Mountable	Yes, up to 40 per rack	Yes, up to 11 per rack
Dimensions (HxWxD)	1.73 x 17.3 x 13.87 in.	7 x 17.2 x 20.5 in.

Selected Part Numbers and Ordering Information[1]

Cisco 7300 System

PWR-7301/2-AC	Cisco 7301 Dual AC Power Supply Option
PWR-7301/2-DC48	Cisco 7301 Dual DC48 Power Supply Option
CISCO7301	Cisco 7301 chassis, 256MB memory, A/C power,64MB Flash
CISCO7304=	Cisco 7300, 4-slot chassis, NSE100, Power, IP Software
CISCO7304-CH	Cisco7304 channel bundle
7300-NSE-100=	Cisco 7304 Network Services Engine 100
7300-NPE-G100=	Cisco 7304 NPE-G100 w/1GB SDRAM, 256MB Flash, 3 GE/FE/E Ports
7300-NSE-100/2	Redundant Cisco 7304 NSE-100 w/Redundancy Feature License
7304-NPE-G100/2	Redundant 7304 NPE-G100 w/1GB SDRAM, 256MB Flash, 3 GE/FE/E Ports
7300-PWR-DC=	Cisco 7304 DC Power Supply Spare
7300-PWR-AC=	Cisco 7304 AC Power Supply Spare
7300-PWR/2-DC	Cisco 7304 Redundant DC Power Supply Option
7300-PWR/2-AC	Cisco 7304 Redundant AC Power Supply Option

Cisco 7300 Memory Options

MEM-7301-1GB=	1GB memory upgrade for 7301
MEM-7301-512MB=	512MB memory upgrade for 7301
MEM-7301-256MB=	256MB memory upgrade for Cisco 7301
7300-MEM-128=	128MB default SDRAM for 7304 NSE-100, spare
7300-MEM-256=	256MB SDRAM for 7304 NSE-100, spare
7300-MEM-512=	512MB SDRAM for 7304 NSE-100, spare
7300-I/O-CFM-64M=	Cisco 7304 Compact Flash Memory, 64 MB
7300-I/O-CFM-128M=	Cisco 7304 Compact Flash Memory, 128 MB

Cisco 7300 Series Compact Flash Disk Options

MEM-7301-FLD64=	Compact Disk Flash for 7301,64MB option
MEM-7301-FLD128=	Compact Disk Flash for 7301, 128MB option
MEM-7301-FLD256	Compact Disk Flash for 7301, 256MB Option

Cisco 7300 Line Cards

7300-1OC12POS-MM=	1-port OC12 POS line card for Cisco 7304 w/ Multi-mode
7300-1OC12POS-SMI=	1-port OC12 POS line card for Cisco 7304 w/ Single-mode IR
7300-1OC12POS-SML=	1-port OC12 POS line card for Cisco 7304 w/ Single-mode LR
7300-1OC48POS-SMI=	1-port OC48 POS line card for Cisco 7304 w/ Single-mode IR
7300-1OC48POS-SML=	1-port OC48 POS line card for Cisco 7304 w/ Single-mode LR
7300-1OC48POS-SMS=	1-port OC48 POS line card for Cisco 7304 w/ Single-mode SR
7300-2OC12POS-MM=	2-port OC12 POS line card for Cisco 7304 w/ Multi-mode
7300-2OC12POS-SMI=	2-port OC12 POS line card for Cisco 7304 w/ Single-mode IR
7300-2OC12POS-SML=	2-port OC12 POS line card for Cisco 7304 w/ Single-mode LR
7300-2OC3ATM-MM=	2-port OC3 ATM line card for Cisco 7304 w/ Multi-mode
7300-2OC3ATM-SMI=	2-port OC3 ATM line card for Cisco 7304 w/ Single-mode IR
7300-2OC3ATM-SML=	2-port OC3 ATM line card for Cisco 7304 w/ Single-mode LR
7300-2OC3POS-MM=	2-port OC3 POS line card for Cisco 7304 w/ Multi-mode
7300-2OC3POS-SMI=	2-port OC3 POS line card for Cisco 7304 w/ Single-mode IR
7300-2OC3POS-SML=	2-port OC3 POS line card for Cisco 7304 w/ Single-mode LR
7300-4OC3POS-MM=	4-port OC3 POS line card for Cisco 7304 w/ Multi-mode
7300-4OC3POS-SMI=	4-port OC3 POS line card for Cisco 7304 w/ Single-mode IR
7300-4OC3POS-SML=	4-port OC3 POS line card for Cisco 7304 w/ Single-mode LR
7300-6T3=	6-port T3 line card for Cisco 7304 w/ DSU

Cisco 7300 Carrier Cards

7300-CC-PA=	7304 Carrier Card for 7200 Series Port Adapters

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco 7300 Series Web site: **http://www.cisco.com/go/7300**

Cisco 7500 Series

An essential part of both Enterprise and Service Provider networks, the Cisco 7500 Series routers are the market leader for edge applications, due to its breadth of services, diverse interfaces, reliability, and performance. Since its inception, the Cisco 7500 has seen huge improvements in performance and its ability to scale, most recently with the Route Switch Processor 16 (RSP16) and Versatile Interface Processor 6-80 (VIP6-80) module. This series combines Cisco's proven software technology with exceptional reliability, availability, serviceability, and performance features to meet the requirements of today's most mission-critical networks.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco 7505	• 5 expansion slots • One CyBus • DS0 to OC-12 connectivity (all platforms)
Cisco 7507	• 7 expansion slots • Dual CyBuses • Redundant power supplies • Diverse set of routing protocols (all platforms)
Cisco 7513	• 13 expansion slots • Dual CyBuses • Redundant power supplies • Diverse set of routing protocols (all platforms)

Key Features

- Supports high-speed media and high-density configurations; uses the processing capabilities of the Versatile Interface Processors and Cisco Express Forwarding
- Performs network services such as QoS, security, compression, and encryption at high speed; VIP technology extends the performance of these services through distributed IP services
- Provides high port density and an extensive range of LAN and WAN media; this feature dramatically reduces the cost per port and allows a flexible configuration
- The Cisco 7500 supports a broad selection of Interface Processors (IPs) and Port Adapters (PAs). Port adapters are shared with the Cisco 7200, 7300, 7400, and 7600 (with FlexWAN Module)
- Enhanced features and capabilities include redundant route processors, power supplies, fans, and software fault isolation with Stateful Switchover and NonStop Forwarding

Competitive Products

- Redback: SMS-500, SMS-1800
- Juniper: M7i, M10, M20
- Juniper: ERX700, ERX1400
- Huawei: NE8 and NE16

Specifications

Feature	Cisco 7505	Cisco 7507	Cisco 7513
Fixed Ports	None	Same as Cisco 7505	Same as Cisco 7505
Expansion Slots	5	7	13
WAN Interface Range	DS0 to OC-12	Same as Cisco 7505	Same as Cisco 7505
Processor	MIPS RISC Processor	Same as Cisco 7505	Same as Cisco 7505
Forwarding Rate	Up to 1.1 Mpps	Up to 2.2 Mpps	Up to 2.2 Mpps
Backplane Capacity	1 Gbps	2 Gbps	2 Gbps
Flash PCMCIA Memory	16MB (expandable to 128MB)	Same as Cisco 7505	Same as Cisco 7505
System DRAM Memory	32MB (expandable to 1GB)	Same as Cisco 7505	Same as Cisco 7505
Minimum Cisco IOS Release	11.3	Same as Cisco 7505	Same as Cisco 7505
Internal Power Supply	AC or DC	AC, dual AC/DC, or dual DC	AC, dual AC/DC, or dual DC
Redundant Power Supply Support	No	Yes	Yes
Chassis Size	6 RU	13 RU	20 RU
Rack Mountable	Yes, up to 6 per rack	Yes, up to 3 per rack	Yes, up to 2 per rack
Dimensions (HxWxD)	10.5 x 17.5 x 17 in.	19.25 x 17.5 x 25 in.	33.75 x 17.5 x 22 in.

Selected Part Numbers and Ordering Information[1]

Cisco 7500 Series Products

CISCO7505/4	Cisco 7505 5-Slot, 1 CyBus, 1RSP4, Single Power Supply
CISCO7507/8-MX	Cisco 7507, 7 Slot, MIX-Enabled, Dual Bus, 1 RSP8, 1 PS
CISCO7507/8X2-MX	Cisco 7507, 7 Slot, MIX-Enabled, Dual Bus, 2 RSP8, 2 PS
CISCO7507/4	Cisco 7507 7-Slot, 2 CyBus, 1RSP4, Single Power Supply
CISCO7507/4X2	Cisco 7507 7-Slot, 2 CyBus, 2 RSP4, Dual Power Supply
CISCO7513/4	Cisco 7513 13-Slot, Dual Bus, 1RSP4, 1 PS
CISCO7513/4X2	Cisco 7513 13-Slot, Dual Bus, 2 RSP4, 2 PS
CISCO7513/8-MX	Cisco 7513, 13 Slot, MIX-Enabled, Dual Bus, 1 RSP8, 1 PS
CISCO7513/8X2-MX	Cisco 7513, 13 Slot, MIX-Enabled, Dual Bus, 2 RSP8, 2 PS
CISCO7507/16-MX	Cisco 7507, 7 Slot, MIX-Enabled, Dual Bus, 1 RSP16, 1 PS
CISCO7507/16X2-MX	Cisco 7507, 7 Slot, MIX-Enabled, Dual Bus, 2 RSP16, 2 PS
CISCO7513/16-MX	Cisco 7513, 13 Slot, MIX-Enabled, Dual Bus, 1 RSP16, 1 PS
CISCO7513/16X2-MX	Cisco 7513, 13 Slot, MIX-Enabled, Dual Bus, 2 RSP16, 2 PS

Cisco 7500 Series Processors and Accessories

RSP4+=	Cisco 7500 Series Route Switch Processor 4+ (Spare)
RSP8=	Cisco 7500 Series Route Switch Processor 8 (Spare)
RSP16=	Cisco 7500 Series Route Switch Processor 16 (Spare)

Route Switch Processor Memory Options (RSP4)

MEM-RSP4-FLC16M=	RSP4 Flash Card: 16 MB Kit
MEM-RSP4-FLC20M=	RSP4 Flash Card: 20 MB Kit
MEM-RSP4-FLC32M=	RSP4/4+ Flash Card: 32 MB Kit
MEM-RSP4-32M=	RSP4 32MB DRAM Upgrade Kit
MEM-RSP4-64M=	RSP4/RSP4+ 64MB DRAM Upgrade Kit
MEM-RSP4-128M=	RSP4/RSP4+ 128MB DRAM Upgrade Kit
MEM-RSP4-128-4PK=	RSP4 128MB DRAM Upgrade Kit (4-pack)
MEM-RSP4-256M=	RSP4/RSP4+ 256MB DRAM Upgrade Kit
MEM-RSP4-256-4PK=	RSP4 256MB DRAM Upgrade Kit (4-pack)
MEM-16F-RSP4+=	RSP4+ 16MB Boot Flash (Spare)
MEM-V250-128-10PK=	128 MByte DRAM Upgrade for VIP2-50/xIP-50 (10-pack)

Route Switch Processor Memory Options (RSP8)

MEM-RSP8-64M=	RSP8 64MB DRAM Option
MEM-RSP8-128M=	RSP8 128MB DRAM Upgrade Kit
MEM-RSP8-256M=	RSP8 256MB DRAM Upgrade Kit
MEM-RSP8-FLC16M=	RSP8 Flash Card: 16 MB Kit
MEM-RSP8-FLC20M=	RSP8 Flash Card: 20 MB Kit
MEM-RSP8-FLC32M=	RSP8 Flash Card: 32 MB Kit
MEM-RSP8-FLD48M=	RSP8 Flash Disk: 48 MB Kit
MEM-RSP8-FLD128M=	RSP8 Flash Disk: 128 MB Kit

Route Switch Processor Memory Options (RSP16)

MEM-RSP16-FLD48M=	RSP16 Flash Disk: 48 MB Option
MEM-RSP16-FLD128M=	RSP16 Flash Disk: 128 MB Option
MEM-RSP16-128M=	RSP16 128MB ECC SDRAM Memory Spare
MEM-RSP16-256M=	RSP16 256MB ECC SDRAM Memory Spare
MEM-RSP16-512M=	RSP16 512MB ECC SDRAM Memory Spare
MEM-RSP16-1G=	RSP16 1GB ECC SDRAM Memory Spare

CISCO7500 Series Gigabit Ethernet Interface Processor

GEIP=	Gigabit Ethernet Interface Processor
GEIP+=	Enhanced Gigabit Ethernet

Cisco 7500 Series Interface Processors

CX-CIP2-ECA1=	CHANNEL IP:CIP2 W/ ECA-1 PORT
CX-CIP2-ECA2=	CHANNEL IP:CIP2 W/ ECA-2 PORTS
FEIP2-DSW-2TX=	2-Port Fast Ethernet IP with Dist. Switching (100TX)
FEIP2-DSW-2FX=	2-Port Fast Ethernet IP with Dist. Switching (100FX)
CX-ECA1-U	ESCON Interface Upgrade for CX-CIP-ECA1 or CX-CIP-PCA1

Cisco 7500 Series Versatile Interface Processors

VIP2-40=	VERSATILE INT. PROCESSOR-2,MODEL 40
VIP2-50=	Versatile Interface Processor 2, Model 50
VIP2-10/15-UPG	VIP2-10 to VIP2-15 Upgrade
VIP2-10/40-UPG	VIP2-10 TO VIP2-40 UPGRADE
VIP2-15/40-UPG	VIP2-15 to VIP2-40 Upgrade
VIP2-20/40-UPG	VIP2-20 TO VIP2-40 UPGRADE
VIP4-50=	Versatile Interface Processor 4, Model 50
VIP4-80=	Versatile Interface Processor 4, Model 80
VIP6-80=	Services Accelerator Versatile Interface Processor 6-80

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco 7500 Series Web site: **http://www.cisco.com/go/7500**

Cisco 7600 Series

The Cisco 7600 Series combines optical WAN/MAN networking and high-volume Ethernet aggregation with a focus on the delivery of high-touch services for the IP and MPLS edge. It combines Layer 2 and Layer 3 networking capabilities with a high-bandwidth, high-performance architecture including hardware-based forwarding of MPLS, IPv4, & IPv6. Cisco 7600 series form factors include the Cisco 7603, 7606, 7609, and 7613. Each router can deliver DS0 to OC-48 WAN and nx10-Mbps Ethernet to nx10-Gigabit Ethernet connectivity into service provider edge, metropolitan-area and enterprise networks for a variety of triple-play and aggregation solutions.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco 7603	• 3 slot (horizontal) chassis; 240 Gbps backplane bandwidth[1]; 30 Mpps forwarding rate[1]; NEBs Compliant
Cisco 7606	• 6 slot (horizontal) chassis; 480 Gbps backplane bandwidth[1]; 30 Mpps forwarding rate[1]; NEBs Compliant
Cisco 7609	• 9 slot (vertical) chassis; 720 Gbps backplane bandwidth[1]; 30 Mpps forwarding rate[1]; NEBs Compliant
Cisco 7613	• 13 slot (horizontal) chassis; 720 Gbps backplane bandwidth[1]; 30 Mpps forwarding rate[1]; NEBs Compliant

1. Bandwidth & forwarding rate numbers assume Sup720 Engine

Key Features

- Up to 30 Mpps forwarding processor with hardware acclerated IPv4, IPv6, & MPLS
- Hardware accelerated IP services on each Optical Services Module (OSM), delivering up to 6 Mpps per slot
- Modular and scalable from 32 Gbps to 720 Gbps switch fabric
- One of the widest, most complete ranges of WAN interfaces in the industry, with DS0 to OC-48 connectivity
- Leveraging the FlexWAN Module, 7x00 port adapters are shared with the Cisco 7200, 7300, 7400, and 7500 which simplifies sparing and protects customer investment in interfaces
- Compatible with Catalyst 6500 LAN interfaces, offering nx10 Mbps Ethernet to 10 Gbps

Competitive Products

• Alcatel: 7450, 7750	• Juniper: ERX700, ERX1400
• Juniper: M10i, M20, M40e, M320	• Extreme: Black Diamond 6808

Specifications

Feature	Cisco 7603	Cisco 7606	Cisco 7609	Cisco 7613
Fixed Ports	SFP & 10/100/1000 (Sup720)	Same as Cisco 7603	Same as Cisco 7603	Same as Cisco 7603
Expansion Slots	3 (horizontal)	6 (horizontal)	9 (vertical)	13 (horizontal)
WAN Interface Range	DS0 to OC-48	Same as Cisco 7603	Same as Cisco 7603	Same as Cisco 7603
Processor	Supervisor720-3B Supervisor720-3BXL	Same as Cisco 7603	Same as Cisco7603	Same as Cisco 7603
Forwarding Rate	Up to 30 Mpps	Same as Cisco 7603	Same as Cisco 7603	Same as Cisco 7603
Backplane Capacity	240 Gbps	480 Gbps	720 Gbps	720 Gbps
Flash PCMCIA Memory	up to 512MB	Same as Cisco 7603	Same as Cisco 7603	Same as Cisco 7603

Feature	Cisco 7603	Cisco 7606	Cisco 7609	Cisco 7613
System DRAM Memory	512MB on Sup720-3B 1G on Sup720-3BXL	Same as Cisco 7603	Same as Cisco 7603	Same as Cisco 7603
Internal Power Supply	AC or DC	Same as Cisco 7603	Same as Cisco 7603	Same as Cisco 7603
Redundant Power Supply Support	Yes	Same as Cisco 7603	Same as Cisco 7603	Same as Cisco 7603
Chassis Height	4 RU	7 RU	20 RU	18 RU
Rack Mountable	Yes, up to 10 per rack	Yes, up to 6 per rack	Yes, up to 2 per rack	Yes, up to 2 per rack
Dimensions (HxWxD)	7 x 17.37 x 21.75 in.	12.25 x 17.37 x 21.75 in.	36.75 x 17.2 x 20.7 in.	33.3 x 17.2 x 18.1 in.

Selected Part Numbers and Ordering Information[1]

Cisco 7613 Systems

CISCO7613	7613 Chassis Bundles
CISCO7613=	Spare CISCO7613 Chassis, equipped with High-speed FAN2
7613-SUP720XL-PS	Cisco 7613 13-slot, SUP720-3BXL and PS
7613-2SUP720XL-2PS	Cisco 7613 13-slot, Redundant System, 2 SUP720-3BXL and 2 PS
7613-SUP7203B-PS	Cisco 7613 Chassis, 13-slot, SUP7203B, Power Supply
7613-2SUP7203B-2PS	Cisco 7613 Chassis, 13-slot, 2 SUP7203B, 2 Power Supply

Cisco 7609 Systems

CISCO7609	7609 Chassis Bundles
CISCO7609=	Cisco 7609 Chassis Spare
7609-SUP720XL-PS	Cisco 7609 9-slot, SUP720-3BXL and PS
7609-2SUP720XL-2PS	Cisco 7609 9-slot, Redundant System, 2 SUP720-3BXL and 2 PS
7609-SUP7203B-PS	Cisco 7609 Chassis, 9-slot, SUP7203B, Power Supply
7609-2SUP7203B-2PS	Cisco 7609 Chassis, 9-slot, 2 SUP7203B, 2 Power Supply

Cisco 7606 Systems

CISCO7606	Cisco 7606 Chassis Bundle
CISCO7606=	7606 chassis spare
7606-SUP720XL-PS	Cisco 7606 6-slot, SUP720-3BXL and PS
7606-2SUP720XL-2PS	Cisco 7606 6-slot, Redundant System, 2 SUP720-3BXL and 2 PS
7606-SUP7203B-PS	Cisco 7606 Chassis, 6-slot, SUP7203B, Power Supply
7606-2SUP7203B-2PS	Cisco 7606 Chassis, 6-slot, 2 SUP7203B, 2 Power Supply
Cisco 7603 Systems	
CISCO7603	Cisco 7603 Chassis Bundle
CISCO7603=	7603 chassis
7603-SUP720XL-PS	Cisco 7603 3-slot, SUP720-3BXL and PS
7603-SUP7203B-PS	Cisco 7603 Chassis, 3-slot, SUP7203B, Power Supply

Cisco 7600 FlexWAN Modules

WS-X6582-2PA=	Enhanced FlexWAN Module for Cisco 7600 / Catalyst 6000
WS-X6182-2PA=	FlexWAN Module for Cisco 7600 / Catalyst 6000

Cisco 7600 Optical Services Modules (OSMs)

OSM-1CHOC12/T1-SI=	1-port CHOC-12/CHSTM-4 OSM IR, to DS0 and T1/E1, w/4GE
OSM-12CT3/T1=	12-port Channelized DS-3 to DS-1/DS-0
OSM-1CHOC12/T3-SI=	1-port CHOC-12/CHSTM-4 OSM, to T3/E3, SM-IR, with 4 GE
OSM-1OC48-POS-SI+=	Enhanced 1-port OC-48/STM-16 SONET/SDH OSM, SM-IR, with 4 GE
OSM-1OC48-POS-SL+=	Enhanced 1-port OC-48/STM-16 SONET/SDH OSM, SM-LR, with 4 GE
OSM-1OC48-POS-SS+=	Enhanced 1-port OC-48/STM-16 SONET/SDH OSM, SM-SR, with 4 GE
OSM-2OC12-ATM-MM+=	Enhanced 2-port OC12/STM4 ATM OSM+, MM, with 4 GE
OSM-2OC12-ATM-SI+=	Enhanced 2-port OC12/STM4 ATM OSM+, SI, with 4 GE
OSM-2OC12-POS-MM+=	Enhanced 2-port OC-12/STM-4 SONET/SDH OSM, MM, with 4 GE
OSM-2OC12-POS-SI+=	Enhanced 2-port OC-12/STM-4 SONET/SDH OSM, SM-IR, with 4 GE
OSM-2+4GE-WAN+=	Enhanced OSM with 4 GE WAN Ports & 2GE LAN Ports
OSM-4OC3-POS-SI+=	Enhanced 4-port OC-3/STM-1 SONET/SDH OSM, with 4 GE
OSM-4OC12-POS-MM+=	Enhanced 4-port OC-12/STM-4 SONET/SDH OSM, MM, with 4 GE
OSM-4OC12-POS-SI+=	Enhanced 4-port OC-12/STM-4 SONET/SDH OSM, SM-IR, with 4 GE
OSM-8OC3-POS-SI+=	Enhanced 8-port OC-3/STM-1 SONET/SDH OSM, SM-IR, with 4 GE
OSM-8OC3-POS-SL+=	Enhanced 8-port OC-3/STM-1 SONET/SDH OSM, SM-LR, with 4 GE
OSM-2OC48/1DPT-SS=	2-port OC-48/STM-16 POS/DPT OSM, SM-SR, with 4 GE
OSM-2OC48/1DPT-SI	2-port OC-48/STM-16 POS/DPT OSM, SM-IR, with 4 GE
OSM-2OC48/1DPT-SL=	2-port OC-48/STM-16 POS/DPT OSM, SM-LR, with 4 GE

Cisco 7600/Catalyst 6500 Ethernet Modules

WS-F6K-DFC=	Distributed Forwarding Card
WS-F6700-DFC3BXL	Catalyst 6500 Dist Fwd Card- 3BXL, for WS-X67xx
WS-F6700-DFC3B=	Catalyst 6500 Dist Fwd Card, 256K+ Routes for WS-X67xx
WS-X6348-RJ-45=	Catalyst 6000 48-port 10/100, Upgradable to Voice, RJ-45

WS-X6516-GBIC=	Catalyst 6500 16-port GigE Mod: fabric-enabled (Req. GBICs)
WS-X6524-100FX-MM=	Catalyst 6500 24-port 100FX, MT-RJ, fabric-enabled
WS-X6502-10GE=	Catalyst 6500 10 Gigabit Ethernet Base Module(Req OIM),Spare
WS-X6816-GBIC=	Catalyst 6500 16-port GigE mod, 2 fab I/F w/DF, (Req GBICs)
WS-X6548-RJ-21=	Catalyst 6500 48-port 10/100, RJ-21, fabric-enabled
WS-X6548-RJ-45=	Catalyst 6500 48-port 10/100, RJ-45, x-bar
WS-X6516-GE-TX=	Catalyst 6500 16-port Gig/Copper Module, x-bar
WS-X6748-GE-TX=	Cat6500 48-port 10/100/1000 GE Mod: fabric enabled, RJ-45
WS-X6724-SFP=	Catalyst 6500 24-port GigE Mod: fabric-enabled (Req. SFPs)
WS-X6748-SFP=	Catalyst 6500 48-port CEF720 GigE Module (Req. SFPs)
WS-X6704-10GE=	Cat6500 4-port 10 Gigabit Ethernet Module (req. XENPAKs)
Cisco 7600 Services Modules	
WS-SVC-IPSEC-1=	IPSec VPN Security Module
WS-SVC-FWM-1-K9=	Firewall blade
WS-SVC-NAM-1=	Network Analysis Module-1
WS-SVC-NAM-2=	Network Analysis Module-2
WS-X6066-SLB-APC=	Content Switching Module
WS-SVC-SSL-1-K9=	SSL Module
WS-SVC-MWAM-1=	Multi-Processor WAN Application Module

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco 7600 Series Web site: **http://www.cisco.com/go/7600**

Cisco 10000 Series

The Cisco 10000 Series is the industry's only edge router that delivers consistent, high performance services for carriers deploying IP, MPLS, and broadband services to DSL and private line customers. Coupled with proven high availability and innovative adaptive network processing technology, the Cisco 10000 Series is uniquely designed to meet the service needs of carriers up to DS3/E3 aggregation speeds.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco 10008	• Broadband features including PPP over ATM, PPP over Ethernet, routed bridge encapsulation, Layer 2 Tunneling Protocol and remote access-MPLS
	• MPLS, MPLS VPN, and MPLS Quality of Service edge features
	• Leased line features such as seamless integration from a dedicated access environment (TDM or SONET/SDH) to the ATM core.

Key Features

- Industry-leading high availability—nonstop performance, with a complete set of reliability features for high availability (99.999 percent uptime). Full hardware redundancy, hot-swappable elements, and seamless route processor cutover provide continuous traffic forwarding.
- Industry-leading session density—Supports thousands of DS0, DS1/E1 connections, or hundreds of clear-channel DS3 connections on a single platform, providing the highest port density of DS3-and-below interfaces; Broad portfolio of line-rate IP sessions
- Integrated Edge—Supports dynamic QoS capabilities along with scalability, performance and single platform for both ATM and Ethernet edge aggregation

Competitive Products

• Redback: SMS-10000, SE-800	• Juniper: ERX700, ERX1400
• Juniper: M5, M10, M20	

Specifications

Feature	Cisco 10008
Fixed Ports	None
Expansion Slots	8 (for interfaces)
WAN Interface Range	DS0 to OC-12
Processor	Cisco PXF Processor
Forwarding Rate	Up to 6.2 Mpps
Backplane Capacity	51.2 Gbps
Flash PCMCIA Memory	48 MB (expandable to 128 MB)
System DRAM Memory	512 MB
Minimum Cisco IOS Release	12.0(23)S, 12.3(7)XI
Internal Power Supply	AC or DC, dual option
Redundant Power Supply	Yes, for both AC and DC
Chassis Height	13 RU
Rack Mountable	Yes, up to 6 per rack
Dimensions (HxWxD)	21.75 x 17.5 x 12 in.

Selected Part Numbers and Ordering Information[1]

Cisco 10008 Pricing Bundles

1ESR10008-1P1AC	C10000 8-slot chassis,1 PRE, 1 AC PEM
ESR10008-1P1AC+6	C10000 8-slot chassis,1 PRE, 1 AC PEM,1CT3 module
ESR10008-1P1DC	C10000 8-slot chassis,1 PRE, 1 DC PEM
ESR10008-1P1DC+6	C10000 8-slot chassis,1 PRE, 1 DC PEM,1CT3 module
ESR10008-1P1AC+4CH	C10000 8-slot chassis, 1 PRE, 1 AC PEM, 1 CH STM-1 Module
ESR10008-1P1DC+4CH	C10000 8-slot chassis, 1 PRE, 1 DC PEM, 1 CH STM-1 Module
ESR10008-2P2AC	C10000 8-slot chassis,2 PREs, 2 AC PEMs
ESR10008-2P2AC+6	C10000 8-slot chassis,2 PREs, 2 AC PEMs,1 CT3 module
ESR10008-2P2DC	C10000 8-slot chassis,2 PREs, 2 DC PEMs
ESR10008-2P2DC+6	C10000 8-slot chassis,2 PREs, 2 DC PEMs,1 CT3 module
ESR10008-2P2AC+4CH	C10000 8-slot chassis, 2 PREs, 2 AC PEMs, 1 CH STM-1 Module
ESR10008-2P2DC+4CH	C10000 8-slot chassis, 2 PREs, 2 DC PEMs, 1 CH STM-1 Module
ESR10008-CHASSIS=	Spare eight-slot Chassis
10000-1P2-1AC	Cisco 10000 eight-slot chassis, 1 PRE2, 1 AC PEM
10000-1P2-1DC	Cisco 10000 eight-slot chassis, 1 PRE2, 1 DC PEM
10000-2P2-2AC	Cisco 10000 eight-slot chassis, 2 PRE2s, 2 AC PEMs
10000-2P2-2DC	Cisco 10000 eight-slot chassis, 2 PRE2s, 2 DC PEMs

Cisco 10000 Series Processors

ESR-PRE1=	Performance Routing Engine, 512 DRAM and 32M Flash
ESR-PRE2=	Performance Routing Engine, 512 DRAM and 32M Flash

Cisco 10000 Series Line Cards

ESR-24CT1/E1=	24port Channelized E1/T1 Line Card
ESR-8E3/DS3=	8 port clear channel E3/DS3 Line Card
ESR-8E3DS3-ATM=	8 port E3/DS3 ATM Line Card
ESR-6OC3/P-SMI=	6 Port OC3/STS3c/STM1c POS Line Card, single mode
ESR-6CT3=	6 port channelized T3 line card
ESR-HH-1GE=	1 port Gigabit Ethernet Half-Slot Line Card
ESR-1GE=	1 pt Gigabit Ethernet line card (requires a GBIC)
ESR-4OC3-CHSTM1	4 pt OC3 chan. STM1 SDH SM line card
ESR-4OC3ATM-SM=	4 Port OC3/STS3c/STM1c ATM Line Card, single mode
ESR-1COC12-SMI=	1 pt ChOC12 (STS12) line card, single mode intermed. reach
ESR-1OC12/P-SMI=	1 pt OC12/STS12c/STM4 POS, single mode, int reach
ESR-1OC12ATM-SM=	1 pt OC12/STM4 ATM Line Card, Single-Mode
ESR1OC48/P/SRPSML=	OC-48/STM-16 POS/SRP SM-LR
ESR1OC48/P/SRPSMS=	OC-48/STM-16 POS/SRP SM-SR
ESR-HH-8FE-TX=	8 port Fast Ethernet Half-Slot Line Card

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco 10000 Series Web site: **http://www.cisco.com/go/10000**

Cisco 10720 Series

The Cisco 10720 Internet Router is a high-performance router and a principle building block in the metro IP network. It enables service providers to offer innovative and differentiated IP services to their customers at optical speeds.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco 10720 Internet Router	• High-performance IP services as part of their business strategy by extending IP further out into the network • Simple, scalable, reliable features of DPT technology while maximizing fiber usage • Any customer already using DPT technology in their network, most likely with DPT cards on the 12000 Internet Router • Metro Ethernet Services such as L2 and L3 VPN with FE/GE hand off to the Customer and 50ms restoration over dark fiber using DPT.

Key Features

- IPS with <50 ms restoration time and SRP MIB support; Multicast support including PIM SM, PIM DM, MBGP; L2 VPN—UTI, L2TPv3 and EoMPLS for Layer 2 to Layer 2 LAN extension; L3 VPN MPLS VPN
- QoS—Modular QoS CLI, CAR, WRED, VTMS traffic shaping, and access lists
- Ethernet features—MDI-MDI-X support, 10/100 speed auto-negotiation, HDX-FDX negotiation and time delay reflectometry (TDR) for 10/100BaseTX
- Hot Standby Routing Protocol (HSRP)/Multiple Hot Standby Routing Protocol (MHSRP)
- Allows service providers to offer IP services closer to the user, enabling them to better control admission to network resources and bypass traditional DS1 and DS3 access options
- Equipped with Ethernet technology
- Supports the full suite of IP routing protocols
- 64-MB built-in Flash for software and configuration load
- Optical receive power monitoring support on OC-48/STM-16 Interface and GE
- Supported management information bases (MIBs) include SNMP, SRP, SONET, Etherlike, OSPF
- Suitable for other applications such as Internet data center applications, intra-POP aggregation, cable multisystem operator (MSO) internetworking, and voice-over-IP (VoIP) aggregation

Competitive Products (vs. Cisco's Metro IP RPR Solution using the 10720)

• Extreme Summit: 48/Blackdiamond comb for GigE Hub & Spoke	• Riverstone: RS3000/RS8600 combo for GigE Hub & Spoke

Specifications

Feature	Cisco 10720
Security Features	Including AAA, RADIUS authentication, TACACS+, and encrypted passwords
Management	Cisco IOS CLI; TACACS+ and RADIUS; Configuration and administration features including Telnet and Cisco Discovery Protocol (CDP); Serial (aux) and console ports for local and remote administration; Remote software download via TFTP and RCP; IP over DCC for remote management of the Cisco ONS 15104 OC-48/STM-16 Optical Regenerator, where applicable
Physical Interfaces	Uplink Modules: 2-port single-mode OC-48c/STM16c DPT (SR 2 km (1.2 miles), IR 15 km (9.3 miles), LR1 40km (24 miles) and LR2 80km (50miles)
	Interface Modules—The Cisco 10720 Internet Router has two dedicated slots for interface modules—modules are not interchangeable or hot swappable:
	• Upper slot is dedicated for DPT or POS Uplink module equipped with two physical ports of OC-48c/STM16c that provide an aggregate bandwidth of approximately 5 Gbps. The cards are available in two four versions of optics, short reach (SR) and intermediate reach (IR), Long Reach1 (LR1) and Long Reach2 (LR2) with two small form-factor OC-48 ports with LC connectors.
	• A third option for the upper slot is the CON-AUX module, which is a depopulated uplink card equipped with Console and Auxiliary ports only; this allows the configuration of the 10720 as an "Ethernet Router" allowing the use of one or more of the Ethernet ports in the lower slot for network connectivity
	• New Uplink module that supports 2XOC48/STM16 RPR/DPT with pluggable optics. This is Cisco's first IEEE 802.17-compliant RPR module. This module can be optionally configured in SRP mode, thus making it backward compatible with existing DPT deployments
	• Lower slot is dedicated for 24-port Fast Ethernet module—available in TX (100 m reach), FX-MM (2 km reach) or FX-SM (15 km reach). The TX module is equipped with RJ-45 connectors while the FX-SM and FX-MM modules are equipped with MT-RJ connectors.
	• Also available is a combination 4 Gigabit Ethernet with Small Form Factor Plug-able (SFP) Optics available in SX 550m, LH 10km, ZH 70km and Copper plus an additional 8 Ports of Fast Ethernet 10/100 TX Copper ports.
	The TX and the FX-MM versions of the 24-port Fast Ethernet modules accommodate copper or multimode fiber deployments within MTUs and the FX-SM allows for deployment of the Cisco 10720 Internet Router in a central location covering Ethernet connectivity to buildings for a radius of up to 15 km.
Dimensions	3.5 x 17.25 x 18.25 in. (8.9 x 43.81 x 46.35 cm)

Selected Part Numbers and Ordering Information[1]

Cisco 10700 Series

CISCO10720-AC-A	Cisco 10720 Internet Router with dual AC power supply
CISCO10720-DC-A	Cisco 10720 Internet Router with dual DC Power Supply
10720-FE-TX	24-port 10/100 Ethernet Access ModuleRJ45 connectors
10720-FE-FX-MM	24-port 100Mbps Multimode Fiber Ethernet Access Module 2kmMTRJ connectors
10720-FE-FX-SM	24-port 100Mbps Single mode Fiber Ethernet Access Module 15kmMTRJ connectors
10720-GE-FE-TX-B	4-port 100Mbps SFP GE with 8-ports of 10/100 Ethernet TX-RJ45
10720-GE-SFP-SX	GE SFP - Short Reach 550M LC connectors
10720-GE-SFP-LH	GE SFP - Intermediate Reach 10KM LC connectors
GLC-ZX-SM	GE SFP - Long Reach 70KM LC connectors
10720-SR-LC	OC-48c/STM-16c SRP Short Reach (2km) Uplink ModuleLC connectors
10720-IR-LC	OC-48c/STM-16c SRP Intermediate Reach (15km) Uplink ModuleLC connectors
10720-LR1-LC	OC-48c/STM-16c SRP Long Reach 1 (40km) Uplink Module LC
10720-LR2-LC	OC-48c/STM-16c SRP Long Reach 2 (80km) Uplink Module-LC connectors
10720-CON-AUX	Console and Auxiliary port that fits in the Upper Slot
10720-SR-LC-POS	OC-48c/STM-16c POS Short Reach (2km) Uplink Module-LC connectors
10720-IR-LC-POS	OC-48c/STM-16c POS Intermediate Reach (15km) Uplink Module-LC connectors
10720-LR1-LC-POS	OC-48c/STM-16c POS Long Reach 1 (40km) Uplink Module - LC
10720-LR2-LC-POS	OC-48c/STM-16c SRP Long Reach 2 (80km) Uplink Module-LC connectors
10720-MEM-512=	512MB RP Memory
10720-RPR-SFP	OC-48c/STM-16c RPR/SRP Uplink Module supporting SFPs
SFP-OC48-SR	OC-48c/STM-16c Short Reach (2KM) pluggable SFP
SFP-OC48-IR1	OC-48c/STM-16c Intermediate Reach1 (15KM) pluggable SFP
SFP-OC48-LR2	OC-48c/STM-16c Long Reach2 (80KM) pluggable SFP

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco 10720 Internet Router Web site: **http://www.cisco.com/go/10700**

Cisco 12000 Series

The Cisco 12000 Series routers make up a portfolio of intelligent routing solutions that scale from 2.5 Gbps/slot to 40 Gbps/slot capacity, enabling carrier-class IP/MPLS core and edge networks.

This portfolio uses advanced silicon and software technologies, delivering high standards of routing performance and quality of service capabilities, comprehensive high-availability support, ATM/Frame Relay transport, and an integrated core and edge feature set. With a fully upgradable modular switch fabric, the Cisco 12000 Series routers help provide investment protection and low total cost of ownership.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco 12400 Internet Routers (10G)	• 10 Gbps/slot, from 80 to 320 Gbps of non-blocking switching capacity
	• Support for high-density, high-speed interfaces: ATM, DPT/RPR, POS, GbE/FE ranging from channelized DS3 (to DS1) through OC-192c/STM-64c
	• 4 10G platforms to choose from: 12416, 320 Gbps, 16 slots, 40 RU; 12410, 200 Gbps, 10 slots, 20 RU; 12406, 120 Gbps, 6 slots, 10 RU; 12404, 80 Gbps, 4 slots, 5 RU
	• Support for industry-leading QoS/CoS features ideal for peering, transit, POP consolidation, and IDC bandwidth aggregation as well as latency-sensitive applications like voice and video
	• Support for IP or MPLS forwarding
	• Support for hundreds of thousands of routes
	• Proven carrier- class reliability and availability through enhanced features such as Online Insertion and Removal, High Availability (RPR+, NSF and SSO) and APS/MPS
Cisco 12000 Internet Routers (2.5G)	• 2.5 Gbps/slot, from 40 to 80 Gbps switching capacity
	• Support for high-density, high-speed interfaces: ATM, DPT/RPR, POS, GbE/FE ranging from channelized DS3 (to DS1) through OC-48c/STM-16c
	• 3 chassis to choose from: 12016, 80 Gbps, 16 slots, 40 RU; 12012, 60 Gbps, 12 slots, 32 RU; 12008, 40 Gbps, 8 slots, 14 RU
	• The 12016 Internet Router is upgradeable to 320 Gbps via an easy, field-installed switch fabric upgrade kit—no need to pull out existing line cards
Cisco 12000 Manager	• An element management solution to increase service velocity and decrease operation costs

Key Features

- Offers full forward compatibility for all line cards
- Scales to the edge, supporting backbone- or edge-optimized line cards in the same chassis
- Maximizes the value of line-rate edge applications with 10G uplinks.
- IP QoS and congestion control implementation that enables real-time services such as VoIP and video. Its distributed architecture and class of service features such as priority based congestion control (WRED) and dedicated low latency queuing (MDRR), along with virtual output queuing (VoQ), eliminate head of line blocking (HOL) and maintain packet sequence integrity under all conditions
- Non-service—impacting online insertion and removal (OIR) of components (including switch fabric cards) and front accessibility reduce downtime and simplify maintenance
- Offers Cisco Non Stop Forwarding (NSF) and Cisco Stateful Switchover (SSO) eliminate single points of failure, help maintain system performance, and prevent service interruption. With these features, packet forwarding remains uninterrupted before, during and after a route processor switchover.

Competitive Products

• Juniper: T640, M160, M40E, M40, and M20	• Avici: Stackable Switch Router (SSR)

Specifications

Feature	Cisco 12008	Cisco 12012	Cisco 12016	Cisco 12404	Cisco 12406	Cisco 12410	Cisco 12416	Cisco 12810	Cisco 12816
Switching Capacity	40 Gbps	60 Gbps	80 Gbps	80 Gbps	120 Gbps	200 Gbps	320 Gbps[1]	800 Gbps	1.28 Tbps
Capacity per slot (full duplex)	2.5 Gbps	2.5 Gbps	2.5 Gbps	10 Gbps	10 Gbps	10 Gbps	10 Gbps[1]	40 Gbps	40 Gbps
Chassis Size	1/3 Rack	Full Rack	Full Rack	1/8 Rack	1/4 Rack	1/2 Rack	Full Rack	1/2 Rack	Full Rack
Chassis Slots	8	12	16	4	6	10	16	10	16
Supported Line Cards	All Cisco 12000 Series 2.5 Gbps line cards	Same as Cisco 12008	All 2.5 Gbps line cards plus all 10 Gbps line cards when upgraded	Same as Cisco 12416	Same as Cisco 12416	Same as Cisco 12416	All Cisco 12000 Series Line Cards	All Cisco 12000 Series Line Cards	All Cisco 12000 Series Line Cards
Supported Protocols	IPv4, MPLS, BGPv4, IS-IS, OSPF v. 2.0, EIGRP, RIP v2, IGMP, PIM (dense and sparse mode)	Same as Cisco 12008	Same as Cisco 12008	Same as Cisco 12416	Same as Cisco 12416	Same as Cisco 12416	IPv4, MPLS, BGPv4, IS-IS, OSPF v. 2.0, EIGRP, RIP v2, IGMP,DVMRP, PIM DM/SM	Same as Cisco 12416	Same as Cisco 12416
Management	CLI, SNMP, Cisco 12000 Manager	CLI, SNMP, Cisco 12000 Manager	CLI, SNMP, Cisco 12000 Manager	CLI, SNMP, Cisco 12000 Manager	CLI, SNMP, Cisco 12000 Manager	CLI, SNMP, Cisco 12000 Manager	CLI, SNMP, Cisco 12000 Manager	CLI, SNMP, Cisco 12000 Manager	CLI, SNMP, Cisco 12000 Manager
Dimensions	24.85 x 17.4 x 21.2 in. (63.1 x 44.2 x 53.8 cm)	56 x 17.3 x 21 in. (142.2 x 43.9 x 53.3 cm)	72.5 x 18.75 x 8.75 in. (184.2 x 47.6 x 61 cm)[2]	18.9 x 18.9 x 27.5 in. (22.23 x 48.01 x 69.85 cm)	18.5 x 18.9 x 28 in. (47 x 48 x 71.1 cm)[3]	37.5 x 19 x 24 in. (95.25 x 48.26 x 61 cm)[4]	72.5 x 18.75 x 8.75 in. (184.2 x 47.6 x 61 cm)[2]	37.5 in. x 19 x 22.0 in. (95.25 cm x 48.26 cm x 55.9 cm)	71.5 in. x 17.25 in. x 22.0 in. (181.6 cm x 43.8 cm x 55.9 cm)

1. The Cisco 12016 may be field upgraded to a Cisco 12416 via a Switch Fabric Upgrade kit, providing 10 Gbps full duplex capacity per slot, for an overall 320 Gbps switching capacity
2. Includes power, front cover, rack mount flanges, and cable-management system
3. Includes rack-mount flanges, power entry module pullouts, blower, and handle
4. Includes cable-management system and front cover

Selected Part Numbers and Ordering Information[1]

Cisco 12000 Series of Gigabit Switch Routers (GSR)

GSR6/120-AC	GSR6/120 w/ 1GRP, 3SFC, 1 CSC, 2Alarms & 1 AC Power Supply
GSR6/120-DC	GSR6/120 w/ 1GRP, 3SFC, 1 CSC, 2Alarms & 1 DC Power Supply
GSR8/40	Cisco12008 GSR 40Gbps;1GRP,1CSC-GSR8,3SFC-GSR8,1DC
GSR10/200-AC	Cisco 12410 200 Gbps; 1GRP, 2 CSC, 5 SFC, 2 Alarm, 2 AC
GSR10/200-DC	Cisco 12410 200 Gbps; 1GRP, 2 CSC, 5 SFC, 2 Alarm, 2 DC
GSR12/60	Cisco12012 GSR 60Gbps;1GRP,1CSC,3SFC,1DC
GSR4/80-AC	GSR12404- 4 slot AC System
GSR4/80-DC	GSR12404- 4 slot DC System
GSR16/80-AC-8R	Cisco 12016 80 Gpbs; 1GRP, 2CSC, 3SFC, 2Alarm, 3AC, 8Rails
GSR16/80-AC4-8R	Same As GSR16/80-AC-8R But W/ 4AC And Requires 8 Foot Rack
GSR16/80-DC-8R	Cisco 12016 80 Gpbs; 1GRP, 2CSC, 3SFC, 2Alarm, 4DC, 8Rails
GSR16/320-AC	Cisco 12416 320 Gbps; 1GRP, 2CSC, 3SFC, 2Alarm, 3AC, 8Rails
GSR16/320-AC4	Same As GSR16/320-AC-8R But W/ 4 AC And Requires 8 Foot Rack
GSR16/320-DC	Cisco 12416 320 Gbps; 1GRP, 2CSC, 3SFC, 2Alarm, 4DC, 8Rails

Cisco 12000 Series Processors

GRP-B	Route Processor, 128MB and 20MB Flash, ECC support
GRP-B/R	GSR Route Processor, Redundant Option
PRP-1	Cisco 12000 Series Performance Route Processor
PRP-1/R	Redundant PRP-1 chassis upgrade option, factory only

Cisco 12000 Series Line Cards

LC-4OC3/POS-SM	4port OC3/STM1 Packet Over SONET/SDH Line Card, Single-Mode
LC-4OC3/POS-MM	4port OC3/STM1 Packet Over SONET/SDH Line Card, Multi-Mode w
LC-1OC12/POS-SM	1port OC12/STM4 Packet Over SONET/SDH Line Card, Single-Mode
LC-1OC12/ATM-MM	1 port OC12/STM4 ATM Line Card, Multi-Mode
LC-1OC12/ATM-SM	1 port OC12/STM4 ATM Line Card, Single-Mode
LC-1OC12/POS-MM	1 port OC12/STM4 Packet Over SONET/SDH Line Card, Multi-Mode
CHOC48/DS3-SR-SC	1 port channelized C-48 to DS3
2CHOC3/STM1-IR-SC	Channelized OC3/STM1 -> DS1/E1, 2 ports Intermediate Reach
4CHOC12/DS3-I-SCB	4 PORT CHANNELIZED OC12 B
4OC3/ATM-IR-SC	4 port OC3/STM1 ATM Line Card intermediate reach
4OC3/ATM-MM-SC	4 port OC3/STM1 multimode ATM line card
4OC3/POS-LR-SC	4 port OC-3/STM1 SONET/SDH Long Reach LC with SC connector
4OC12/ATM-IR-SC	4 port OC-12/STM4 ATM LC Intermediate Reach
4OC12/ATM-MM-SC	4 port OC-12/STM4 ATM Line Card multimode
4OC12/POS-MM-SC-B	4OC12/POS-MM-SC-B
4OC12X/POS-M-SC-B	4-port OC12/POS Eng3 Multi-mode
4OC12/POS-IR-SC-B	4OC12/POS-IR-SC-B
4OC12X/POS-I-SC-B	4 PORT OC12 POS B
4OC48/SRP-SFP=	4 Port OC48c/STM16c SRP Linecard, SFP Optics
4OC48E/POS-LR-SC	Edge 4 Port OC-48c/STM-16c SONET/SDH LR with SC
4OC48E/POS-SR-SC	Edge 4 Port OC-48c/STM-16c SONET/SDH SR with SC
8OC03/ATM/TS-IR-B	8-port OC03/STM1 ATM IR LC with SC connector
8OC03/ATM/TS-MM-B	8-port OC03/STM1 ATM MM LC with SC Connector
OC12/SRP-IR-SC-B	OC12 SRP IR line card
OC12/SRP-LR-SC-B	OC12 SRP LR line card
OC12/SRP-MM-SC-B	OC12 SRP MM line card
OC12/SRP-XR-SC	OC12 SRP single ring linecard, single mode 1550, XR
OC48/SRP-LR-SC-B=	OC48 SRP Rev-B Line Card, Single Mode, Long Reach
OC48/SRP-SR-SC-B=	OC48 SRP Rev-B Line Card, Single Mode, Short Reach, GSR
OC48E/POS-LR-SC-B=	1 Port OC-48c/STM-16c SONET/SDH 1550nm LR with SC
OC48E/POS-SR-SC-B=	1 Port OC-48c/STM-16c SONET/SDH 1310nm SR with SC, GSR
OC48X/POS-LR-SC	CONCATENATED OC48 WITH EXTENDED FEATURES LONG REACH
OC48X/POS-SR-SC	1 port OC48 POS Extended features
8OC3/POS-MM=	8 port OC3/STM1 SONET/SDH Multi-Mode LC with MTRJ conn Spare
8OC3/POS-SM=	8 port OC3/STM1 SONET/SDH Single-Mode LC with LC conn Spare
1X10GE-LR-SC=	Cisco 12000 1-Port 10GE Card, 1310nm serial, 10km, SC
16OC3/POS-MM=	16 port OC3/STM1 SONET/SDH Multi-Mode LC with MTRJ conn
16OC3/POS-SM=	16 port OC3/STM1 SONET/SDH Single-Mode LC with LC conn Spare
16OC3X/POS-I-LC-B	16 PORT OC3 WITH EXTENDED FEATURES RELEASE B
EPA-GE/FE-BBRD	Cisco 12000 Modular GE Baseboard w/ 1GE and 3 EPA Slots
EPA-3GE-SX/LH-LC	Cisco 12000 3-Port GE Port Adapter for EPA-GE/FE-BBRD
3GE-GBIC-SC	GSR12000 three-port GE line card
GE-GBIC-SC-B	GSR12000 single port Gigabit Ethernet line card
GBIC-SX-MM	1000base-SX GBIC module, multimode,standardized for GSR12000
GBIC-LH-SM	1000base-LH GBIC module,singlemode,standardized for GSR12000
GBIC-ZX-SM	GBIC very long reach GBIC module for the GE line card
6CT3-SMB	Channelized T3 for the GSR
GLC-LH-SM	GE SFP, LC connector LH transceiver
GLC-SX-MM	GE SFP, LC connector SX transceiver
6DS3-SMB-B	6DS3-SMB-B w/ ECC
6E3-SMB	E3 line card, 6 ports
12DS3-SMB-B	12DS3-SMB-B w/ ECC
12E3-SMB	E3 line card, 12 ports
CHOC12/STS3-IR-SC=	Channelized OC-12/STM-4 with four STS-3c/STM-1 POS paths
LC-OC12-DS3	1 port Channelize OC-12 with 12 DS3s
8FE-FX-SC-B	GSR 8-port 100baseFX, SC connector, version B
8FE-TX-RJ45-B	8-port 100baseTX, RJ45 connector type, version B
OC192/POS-IR-SC	1 Port OC192c/STM64c POS, 1550nm IR, SC
OC192/POS-SR-SC	1 Port OC192c/STM64c POS, 1310nm SR, SC
OC192/POS-VSR	1 Port OC192c/STM64c POS, VSR Optics
OC192E/POS-VSR	1 Port OC192c/STM64c POS Edge Card, VSR Optics
OC192E/POS-IR-SC	1 Port OC192c/STM64c POS Edge Card, 1550nm IR, SC
OC192E/POS-SR-SC	1 Port OC192c/STM64c POS Edge Card, 1310nm SR, SC
OC192/SRP-VSR	1 Port OC192c/STM64c SRP Linecard, 850nm VSR, MTP
OC192/SRP-IR-SC	1 Port OC192c/STM64c SRP Linecard, 1550nm IR, SC
OC192/SRP-SR-SC	1 Port OC192c/STM64c SRP Linecard, 1310nm SR, SC
4GE-SFP-LC=	4 port-GE line card for Cisco 12000

Cisco 12000 Series Pluggable Optic Modules

POM-OC48-LR2-LC   1-port OC-48/STM-16 Pluggable Optic Module, 1550nm SM-LR2 LC

POM-OC48-SR-LC   1-port OC-48/STM-16 Pluggable Optic Module, 1310nm SM-SR LC

1. Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco 12000 Series Web site: **http://www.cisco.com/go/12000**

C H A P T E R

2

LAN Switching

LAN Switching Products at a Glance

Product	Features	Page
Catalyst 2900 Series	• Fixed-configuration Ethernet switches • Autosensing 48 10/100/1000BASE-T ports and 4 small form-factor pluggable (SFP) ports, providing a total of 52 Gigabit Ethernet ports • Managed	2-3
Catalyst 2940 Series	Fixed-configuration 10/100 Ethernet switches • 8 10/100 ports + 1 10/100/1000BASE-T port (WS-C2940-8TT-S) • 8 10/100 ports + 1 100BASE- FX or SFP port (WS-C2940-8TF-S) • Small form factor (10.6 in. long and 6.4 in. deep) and all metal shell • Silent operation with no fans • Flexible mounting capabilities • Simplified network management through Cisco Cluster Management Suite	2-4
Catalyst 2950 Series	Fixed-configuration basic and Intelligent Ethernet 10/100 switches • 12/24/48 10/100 port managed switches with stackable and standalone models • Flexible uplink options: fixed 100Base FX, fixed 1000BaseT, fixed 1000BaseSX, and GBIC-based ports • Industrial-grade, rugged models (Catalyst 2955) for harsh environment deployments • Wire-speed, high performance switch • Models with the Standard Image software (SI) provide Layer 2 Cisco IOS functionality for basic data, voice, and video services at the edge of the network. • Models with the Enhanced Image software (EI) bring Layer 2-4 intelligent services such as advanced Quality of Service, rate limiting, security filtering and multicast management capabilities • Stackable up to 9 switches with Gigastack GBIC • Simplified network management through Cisco Cluster Management Suite up to 16 fixed configuration Catalyst switches	2-6
Catalyst 2970 Series	The Cisco Catalyst 2970 Series switches are affordable Gigabit-to-the-desktop Ethernet switches that deliver wire-speed intelligent services for small and medium-sized businesses and enterprise branch offices.	2-10
Catalyst 3500 Series XL	Fixed-configuration Gigabit Ethernet switches • 8 GBIC-based ports (3508G XL) • Stackable up to 9 switches with GigaStack GBIC • Cisco Switch Clustering capable • Managed	2-11
Catalyst 3550 Series	Fixed-configuration Intelligent Ethernet switches in stackable 10/100, inline power, or Gigabit Ethernet configurations • Network control and bandwidth optimization via advanced Quality of Service (QoS), granular rate-limiting, Access Control Lists (ACLs), and multicast services • Network security through a wide range of authentication methods, data encryption technologies, and access restriction features based on users, ports, and MAC addresses • Network scalability through advanced routing protocols such as EIGRP, OSPF, BGP, and PIM (requires Enhanced Multilayer Software Image (EMI)) • Intelligent adaptability through Cisco Identity Based Networking Services (IBNS) offering greater flexibility and mobility to stratified users	2-12
Catalyst 3750 Series	Provides the highest levels of resilient stacking via Cisco StackWise™ technology, intelligent network services, and Gigabit Ethernet optimization. The following configurations can be interconnected and are stackable up to 9 switches. • 24 10/100 ports with or without Power over Ethernet (PoE) and 2 SFP ports • 48 10/100 ports with or without PoE and 4 SFP ports • 24 and 48 10/100/1000 ports with or without PoE and 4 SFP ports • 24 10/100/1000 ports • 16 10/100/1000 ports and 1 10GE XENPAK port • 12 SFP ports	2-15

Product	Features	Page
Catalyst 4500 Series—Modular Configuration (4503, 4506, 4507R, 4510R)	Modular switch with integrated intelligent L2-L4 services for converged networks in enterprise LAN Access, Layer2/Layer3 distribution, SMB and branch office. • Resilient and simple architecture maximizing desktop user • Up to 384 ports of Ethernet, FE or GE over Fiber or Copper • High performance, Layer 2/3/4 switching up to 102 Mpps • Up to 136 Gbps of switching capacity • Advanced network control with predictable performance, granular QoS and advanced security • Web-based Network Management	2-18
Catalyst 4000 Series—Fixed Configuration (Catalyst 4912G)	High performance fixed Gigabit Ethernet switch with intelligent enterprise Cisco IOS services	2-20
Catalyst 6500 Series	High-performance, multilayer switch with integrated intelligent services for enterprise campus backbones, wiring closets, server aggregation, or internet data centers • Up to 1152 10/100 ports and 57710/100/1000 ports, up to 410 high performance Gigabit Ethernet ports, up to 32 10GE ports, multigigabit L4-7 and Security Services such as Firewall, Intrusion Detection and Load Balance • Layer 4-7 services • Up to 720 Gbps of switching capacity and Packet throughput scalable to 425 Mpps IPv4 (200 Mpps IPv6)	2-21
Catalyst 8500 Series	High-performance, modular, multimedia switch router • Wire speed, nonblocking IP, IPX, IP multicast Layer 3 switching • Multiple interface options • Managed	2-24

Cisco LAN and MAN Products Port Matrix

	Switches										
	Catalyst 2900	Catalyst 2940	Catalyst 2950	Catalyst 2970	Catalyst 3500 XL	Catalyst 3550	Catalyst 3750	Catalyst 4500	Catalyst 4948	Catalyst 6500	Catalyst 8500
Fixed Ports Only	X										
Fixed and Modular Ports		X	X	X	X	X	X		X		
Modular Ports Only								X		X	X
Ports											
10BASE-T Switched	X	X	X		X	X	X	X	X	X	
10BASE-FL Switched										X	
100BASE-T Switched	X	X	X		X	X	X	X	X	X	X
100BASE-FX Switched		X	X			X	X	X		X	
10/100 Autosensing Switched	X	X	X		X	X	X	X	X	X	X
Gigabit Ethernet	X	X	X	X	X	X	X	X	X	X	X
10/100/1000BaseT				X	X	X	X	X	X	X	
10GE						X	X			X	
ATM										X	X
Integrated Power over Ethernet (PoE)					X	X	X	X		X	
Integrated Server Load Balancing										X	

Cisco Catalyst 2900 Series

The Cisco Catalyst 2948G-GE-TX Gigabit Ethernet switch offers affordable Gigabit Ethernet connectivity for small and mid-size networks. It enhances network performance and productivity where higher densities of 10/100/1000BASE-T ports are required. The Catalyst 2948G-GE-TX is an affordable solution for delivering Gigabit Ethernet connectivity to the desktop over Category 5 copper cabling.

Key Features

- Autosensing 48 10/100/1000BASE-T ports and 4 small form-factor pluggable (SFP) ports, providing a total of 52 Gigabit Ethernet ports; 4 SFP ports are wire-speed, and the 48 10/100/1000BASE-T ports can burst to Gigabit Ethernet line rate and share 12 Gbps of capacity (or 6 Gbps full-duplex) into the switching fabric
- All ports can use Cisco Gigabit EtherChannel® or IEEE 802.3ad for high-speed interconnection applications
- Uses the standard IEEE 802.3x flow control (PAUSE frame) mechanism to control Gigabit Ethernet host traffic
- Uses the feature-rich Cisco Catalyst OS software

Specifications

Feature	Catalyst 2948G-GE-TX
Fixed Ports (connections)	48 Ethernet 10/100/1000BASE-T ports and 4 SFP-based Gigabit Ethernet ports;)
Full-Duplex Capabilities	6 Gbps full-duplex
VLAN Maximum	2000
Flash Memory	16 MB
DRAM Memory	64 MB
Embedded RMON	Statistics, history, alarms, events
Warranty	Limited lifetime hardware warranty
Performance	20 Gbps maximum forwarding bandwidth at Layer 2 switching fabric; Forwarding rate of 29.76 Mpps for 64-byte packets; 64 MB DRAM and 16 MB Flash memory; Configurable up to 16,000 MAC addresses; Configurable maximum transmission unit (MTU) of up to 1522 bytes for bridging on Gigabit Ethernet ports
Connectors and Cabling	10BASE-T ports: RJ-45 connectors, 2-pair Category 3, 4, or 5 unshielded twisted-pair (UTP) cabling; 100BASE-TX ports: RJ-45 connectors, 2-pair Category 5 UTP cabling; 1000BASE-T ports: RJ-45 connectors, 4-pair Category 5 UTP cabling; 1000BASE-T SFP-based ports: RJ-45 connectors, 4-pair Category 5 UTP cabling; 1000BASE-SX, -LX/LH, -ZX, and CWDM SFP-based ports: LC fiber connectors (single-mode, or multimode fiber); 10/100 management port: RJ-45 connector; Management console port: RJ-45-to-DB9 cable for PC connections
Power Connectors	Customers can provide power to a switch by using either the internal power supply or the Cisco RPS 675. Internal Power Supply Connector: autoranging unit, supports input voltages between 100 and 240 VAC, Use the supplied AC power cord to connect the AC power connector to an AC power outlet; Cisco RPS Connector: optional Cisco RPS 675 that uses AC input and supplies DC output to the switch, offers a 675W RPS that supports up to six external network devices and provides power to one failed device at a time, automatically senses when the internal power supply of a connected device fails and provides power to the failed device, preventing loss of network traffic, Only the Cisco RPS 675 (model PWR675-AC-RPS-N1=) should be attached to the redundant power supply receptacle
RPS	Yes, RPS 675
Indicators	Per-port link status LED; System-status LEDs: system, power, and RPS
Environmental Ranges	Operating temperature: 32 to 113× F (0 to 45× C)
	Storage temperature: -13 to 158× F (-25 to 70× C)
	Operating relative humidity: 10 to 85 percent (noncondensing)
	Operating altitude: Up to 10,000 ft (3049 m)
	Storage altitude: Up to 15,000 ft (4573 m)
Safety Certifications	UL to UL 60950, Third Edition; C-UL to CAN/CSA C22.2 No. 60950-00, Third Edition; TUV/GS to EN 60950:2000; CB to IEC 60950 with all country deviations; NOM to NOM-019-SCFI; CE Marking
Dimensions (HxWxD)	1.73 x 17.5 x 17 in. (4.39 x 44.5 x 43.1 cm)
Weight	13 lb (5.9 kg)
Electromagnetic Emissions Certifications	FCC Part 15 Class A; EN 55022: 1998 (CISPR22); EN 55024: 1998 (CISPR24); VCCI Class A; AS/NZS 3548 Class A; CE; CNS 13438 Class A; MIC
Telco	CLEI code

Selected Part Numbers and Ordering Information[1]

Catalyst 2900 Series Switches

WS-C2948G-GE-TX	48 10/100/1000 ports + 4 SFP ports
PWR675-AC-RPS-N1=	Cisco RPS 675 with one connector cable
CAB-RPS-1614=	1.2-meter cable for Cisco RPS 675 to external device connection
RCKMNT-1RU=	Spare rack mount kit
RCKMNT-REC-1RU=	Recessed spare rack mount kit
GLC-LH-SM=	Gigabit Ethernet SFP, LC connector, LH transceiver
GLC-SX-MM=	Gigabit Ethernet SFP, LC connector, SX transceiver
GLC-ZX-SM=	Gigabit Ethernet SFP, LC connector, ZX transceiver
GLC-T=	Gigabit Ethernet SFP, RJ-45 connector, 10/100/1000BASE-T transceiver
CWDM-SFP-1470= *	Cisco CWDM SFP 1470 nm; Gigabit Ethernet and 1G/2G FC (gray)
CWDM-SFP-1490= *	Cisco CWDM SFP 1490 nm; Gigabit Ethernet and 1G/2G FC (violet)
CWDM-SFP-1510= *	Cisco CWDM SFP 1510 nm; Gigabit Ethernet and 1G/2G FC (glue)
CWDM-SFP-1530= *	Cisco CWDM SFP 1530 nm; Gigabit Ethernet and 1G/2G FC (green)
CWDM-SFP-1550= *	Cisco CWDM SFP 1550 nm; Gigabit Ethernet and 1G/2G FC (yellow)
CWDM-SFP-1570= *	Cisco CWDM SFP 1570 nm; Gigabit Ethernet and 1G/2G FC (orange)
CWDM-SFP-1590= *	Cisco CWDM SFP 1590 nm; Gigabit Ethernet and 1G/2G FC (red)
CWDM-SFP-1610= *	Cisco CWDM SFP 1610 nm; Gigabit Ethernet and 1G/2G FC (brown)
CSS5-CABLX-LCSC=	CSS11500 10-meter fiber single- mode LX LC-to-SC connectors
CSS5-CABSX-LC=	CSS11500 10-meter fiber multimode SX LC connectors
CSS5-CABSX-LCSC=	CSS11500 10-meter fiber multimode SX LC-to-SC connectors
CAB-SM-LCSC-1M	1-meter fiber single-mode LC-to-SC connectors
CAB-SM-LCSC-5M	5-meter fiber single-mode LC-to-SC connectors

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the *Distribution Product Reference Guide* at: http://www.cisco.com/dprg (limited country availability).

For More Information

See the Catalyst 2900 Web site: **http://www.cisco.com/go/2900**

Cisco Catalyst 2940 Series

The Cisco Catalyst 2940 series switches are small, standalone, managed switches with eight Fast Ethernet ports and a single integrated Fast Ethernet or Gigabit Ethernet uplink. The switches are designed to be used outside the wiring closet in the end-user workspace, and feature a durable metal shell, no fan for silent operation, easy wall or under-the-desk mounting, a security lock slot to prevent theft, and an available cable guard to secure the Ethernet cables and switch.

When to Sell

Sell This Product	When a Customer Needs These Features
Catalyst 2940 Series	• Low port density and price with high performance 10/100 Mbps connectivity • Small size with quiet operation • Fiber or 10/100/1000BaseT uplink • Flexible mounting capabilities

Key Features

- Cisco Cluster Management Suite (CMS) offers superior manageability, ease-of-use and ease-of-deployment and enhanced configuration wizards; Advanced configuration and ongoing management using a console port and supports remote management protocols
- Express Setup is a Web browser utility that allows simple switch setup so that novices can even perform a basic configuration
- Wire-speed performance across all ports
- Deployed in small workgroups environments outside of the wiring closet
- QoS and security based on Layer 2 information

Specifications

Feature	Catalyst 2940-8TT	Catalyst 2940-8TF
Fixed Ports	8 port 10/100 autosensing & 1 port 10/100/1000	8 port 10/100 autosensing & 1 port 100BASE-FX or 1000BASE-X Small Form-Factor Pluggable
Forwarding Bandwidth	3.6 Gbps	Same as Catalyst 2940-8TT
Forwarding Rate	2.7 Mpps	Same as Catalyst 2940-8TT
Full Duplex Capabilities	All Ports	Same as Catalyst 2940-8TT
VLAN Maximum	4-port-based VLANs	Same as Catalyst 2940-8TT
FEC	Yes	Same as Catalyst 2940-8TT
802.1Q	Yes	Same as Catalyst 2940-8TT
Security	Port Security with MAC aging, Private VLAN Edge, 802.1x, TACACS+, RADIUS	Same as Catalyst 2940-8TT
Multicast	IGMP Snooping	Same as Catalyst 2940-8TT
QoS	802.1p, 4 egress queues, WRR, SPS	Same as Catalyst 2940-8TT
Management Capabilities	SNMP, Telnet, RMON, CiscoWorks, CMS	Same as Catalyst 2940-8TT
Flash Memory	8 MB	Same as Catalyst 2940-8TT
CPU DRAM	16 MB	Same as Catalyst 2940-8TT
Embedded RMON	History, Events, Alarms, Statistics	Same as Catalyst 2940-8TT
Dimensions (HxWxD)	1.55 x 10.6 x 6.42 in. (3.94 x 26.92 x 16.3 cm)	Same as Catalyst 2940-8TT
Weight	3 lb (1.36 kg)	Same as Catalyst 2940-8TT

Selected Part Numbers and Ordering Information[1]

Catalyst 2940 Series

WS-C2940-8TF	8 10/100 ports and 1 100BASE-FX or SFP port
WS-C2940-8TT	8 10/100 ports and 1 10/100/1000 port
CABLEGUARD-C2940=	Cable Guard secures switch; prevents tampering w/ Ethernet jacks

Small Form-Factor Pluggable (SFP) Transceivers

GLC-LH-SM=	1000BASE-LX/LH Gigabit Ethernet SFP, LC connector, LH transceiver
GLC-SX-MM=	1000BASE-SX Gigabit Ethernet SFP, LC connector, SX transceiver

Fiber Patch Cables

CAB-MTRJ-SC-MM-1M=	1-meter, MT-RJ-to-SC multimode cable
CAB-MTRJ-ST-MM-1M=	1-meter, MT-RJ-to-ST multimode cable
CAB-MTRJ-SC-MM-3M=	3-meter, MT-RJ-to-SC multimode cable
CAB-MTRJ-ST-MM-3M=	3-meter, MT-RJ-to-ST multimode cable
CAB-MTRJ-SC-MM-5M=	5-meter, MT-RJ-to-SC multimode cable
CAB-MTRJ-ST-MM-5M=	5-meter, MT-RJ-to-ST multimode cable

Catalyst 2940 Series Packaged SMARTnet Maintenance 8x5xNBD

CON-SNT-29408TF	Packaged SMARTnet 8x5xNBD Maintenance for the Catalyst 2940-8TF
CON-SNT-29408TT	Packaged SMARTnet 8x5xNBD Maintenance for the Catalyst 2940-8TFT

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the *Distribution Product Reference Guide* at: http://www.cisco.com/dprg (limited country availability).

For More Information

See the Catalyst 2940 Web site: **http://www.cisco.com/go/catalyst2940**

Cisco Catalyst 2950 Series Intelligent Ethernet Switches

The Catalyst 2950 Series with Intelligent Ethernet Switches are fixed-configuration, standalone and stackable models that provide wire-speed Fast Ethernet and Gigabit Ethernet connectivity for small, mid-sized, service provider and industrial networks. When a Catalyst 2950 Switch is combined with a Catalyst 3550 Series Switch, the solution is capable of enabling IP routing from the edge to the core of the network. These Intelligent Ethernet Switches come with Enhanced Image (EI) software configuration only.

In addition to the range of Intelligent Ethernet switches, the Catalyst 2950 Series also includes switches with Standard Image (SI) software configuration only and are standalone, fixed-configuration, managed 10/100 switches with Gigabit uplinks (2950SX-48, 2950T-48, and 2950SX-24 only) providing user connectivity for small to mid-sized networks. These wire-speed desktop switches come with Standard Image (SI) software features and offer Cisco IOS functionality for basic data, video and voice services at the edge of the network.

The Catalyst 2950 Series also includes the Cisco Catalyst 2955T-12, 2955C-12, and 2955S-12. The Cisco Catalyst 2955 are industrial-grade switches providing Fast Ethernet and Gigabit Ethernet connectivity for deployment in harsh environments. It offers a range of copper and fiber uplink options and operates in environments such as industrial networking solutions (industrial Ethernet deployments), intelligent transportation systems (ITSs), and transportation network solutions. It is also suitable for many military and utility market applications where the environmental conditions or suspended solid concentrations exceed the specifications of other commercial switching products.

When to Sell

Sell This Product	When a Customer Needs These Features
Catalyst 2950 Series Intelligent Ethernet Switches with Enhanced Image (EI)	• Layer 2/3/4 based services: Advanced QoS, Security, High availability and STP enhancements • Wire-speed performance • Advanced QoS, Security, High availability and STP enhancements • Cisco Cluster Management • Stackable • GBIC based uplink ports for media flexibility
Catalyst 2950G-48-EI	• Ideal for desktop connectivity • High Port Density
Catalyst 2950G-24-EI	• Ideal for desktop connectivity • Medium Port Density
Catalyst 2950G-24-EI-DC	• Ideal for Telco/DCN environments • NEBS compliant • Medium Port Density
Catalyst 2950G-12-EI	• Ideal for desktop connectivity • Low Port density
Catalyst 2950T-48	• High port density • High speed uplink connectivity with 2 fixed 10/100/1000BASE-T ports
Catalyst 2950T-24	• High speed uplink connectivity with 2 fixed 10/100/1000BASE-T ports • Low price per port
Catalyst 2950C-24	• High speed uplink connectivity over extended distances with 2 fixed 100BASE-FX connections using MT-RJ connectors • Low price per port
Catalyst 2950 Series with Standard Image (SI)	• Wire speed, high performance switches for delivering 10/100 Mbps speed connectivity to desktop PCs, servers and other systems • Layer 2-based QoS and Security features • Cisco Cluster Management • Ideal for desktop connectivity·
Catalyst 2950-12	• Low Port density

Sell This Product	When a Customer Needs These Features
Catalyst 2950-24	• Medium port density
Catalyst 2950SX-48	• High port density • High speed uplink connectivity with 2 fixed 1000BASE-SX ports
Catalyst 2950SX-24	• High speed uplink connectivity with 2 fixed 1000BASE-SX ports • Medium port density
Catalyst 2955 Series with Enhanced Image (EI)	• Ideal for harsh network environments • Rugged: Implements industrial-grade components, a compact form factor, convection cooling, and relay output signaling. Designed to operate at extreme temperatures and under extreme vibration and shock. • Layer 2/3/4 based services: Advanced QoS, Security, High availability and STP enhancements • Wire-speed performance
Catalyst 2955T-12	• Twelve 10/100 ports and two 10/100/1000BASE-TX (Copper) uplinks
Catalyst 2955C-12	• Twelve 10/100 ports and two 100BASE-FX (Multimode Fiber) uplinks
Catalyst 2955S-12	• Twelve 10/100 ports and two 100BASE-LX (Singlemode Fiber) uplinks

Key Features

- Cisco Cluster Management (CMS) Software offers superior manageability, ease-of-use and ease-of-deployment and enhanced configuration wizards
- Wire-speed performance in connecting end-stations to the LAN
- Provides intelligent services such as advanced quality of service, rate-limiting, security filters, and multicast management, to the network edge-while maintaining the simplicity of traditional LAN switching
- Catalyst 2950: Ideal for small- and mid-sized networks
- Catalyst 2955: Ideal for harsh network environments
- Sophisticated Multicast Management via IGMP Snooping
- Scalability and high availability features
- Support for Cisco Redundant Power System 675 (RPS 675)

Competitive Products

- Hewlett Packard: Procurve 2500 /2650
- Nortel: BPS 2000/450T/420T
- 3 Com: Superstack 3300/4300/4400/4400SE/4200 series
- Extreme: Summit 24 e2e3
- Dell: Powerconnect 3024/3048/3248
- Hirshchmann
- GarretCom
- Sixnet

Specifications

Feature	2950G-48-EI	2950G-24-EI	2950G-24-EI-DC	2950G-12-EI	2950T-24
Fixed Ports	48 port 10/100 autosensing & 2 GBIC-based Gigabit Ethernet ports	24 port 10/100 autosensing & 2 GBIC ports	24 port 10/100 autosensing & 2 GBIC ports and DC Power	12 port 10/100 autosensing & 2 GBIC ports	26-port (24 10/100 autosensing & 2 ports 1000BaseT
Forwarding Bandwidth	13.6 Gbps	8.8 Gbps	8.8Gbps	6.4Gbps	8.8 Gbps
Forwarding Rate	10.1 Mpps	6.6 Mpps	6.6 Mpps	4.8 Mpps	6.6 Mpps
Full-Duplex Capabilities	All Ports	All Ports	All Ports	All Ports	All Ports
VLAN Maximum	250-port-based VLANS	Same as 2950G-48-EI	Same as 2950G-48-EI	Same as 2950G-48-EI	Same as 2950G-48-EI
FEC	Yes	Yes	Yes	Yes	Yes
802.1Q	Yes	Yes	Yes	Yes	Yes
Security	Port Security, with MAC aging, Private VLAN Edge, ACL, 802.11x, IBNS, SSH, RADIUS, TACACS+, SNMPv3 (crypto), BPDU Guard, BPDU Scheduling, SPAN for Intrusion Detection, Spanning Tree Root Guard	Same as 2950G-48-EI	Same as 2950G-48-EI	Same as 2950G-48-EI	Same as 2950G-48-EI
Multicast	IGMP Snooping, IGMP filtering, Multicast VLAN Registration	Same as 2950G-48-EI	Same as 2950G-48-EI	Same as 2950G-48-EI	Same as 2950G-48-EI

Feature					
QoS	802.1P, 4 egress queues, Weighted Round Robin, Strict Priority Scheduling, Expedite Queuing, Policing, Marking, Layer 3 and 4 Services, Auto QoS	Same as 2950G-48-EI	Same as 2950G-48-EI	Same as 2950G-48-EI	Same as 2950G-48-EI
Management Capabilities	Express Setup, SPAN for Intrusion Detection, L2 Trace Route, VLAN 1 minimization, Auto configuration, SNMP, Telnet, RMON, CWSI, (CLI)-based out-of-band, embedded CMS, RSPAN	Same as 2950G-48-EI	Same as 2950G-48-EI	Same as 2950G-48-EI	Same as 2950G-48-EI
Software Image	Enhanced Image (EI)	Enhanced Image (EI)	Enhanced Image (EI)	Enhanced Image (EI)	Enhanced Image (EI)
Flash Memory	8 MB	8 MB	8 MB	8 MB	8 MB
CPU DRAM	16 MB	16 MB	16 MB	16 MB	16 MB
Embedded RMON	History, Events, Alarms, Statistics	Same as 2950G-48-EI	Same as 2950G-48-EI	Same as 2950G-48-EI	Same as 2950G-48-EI
Dimensions (H x W x D)	1.72 x 17.5 x 13 in.	1.72 x 17.5 x 9.52 in.	1.72 x 17.5 x 9.52 in.	1.72 x 17.5 x 9.52 in.	1.75 x 17.5 x 16 in.

Feature	2950T-48	2950-24	2950-12	2950SX-12	2950SX-48
Fixed Ports	50-port (48 10/100 autosensing & 2 ports 10/100/1000BASE-T) T-12: 2 fixed 10/100/1000BASE-T uplink ports	24-port 10/100 autosensing	12-port 10/100 autosensing	26-port (24 10/100 autosensing & 2 ports1000BaseSX) C-12:2 fixed 100BASE-FX multimode uplink ports; S-12: 2 fixed 100BASE-LX single-mode uplink ports	50-port (48 10/100 autosensing & 2 ports 1000BASE-SX) 12 10/100 ports
Forwarding Bandwidth	13.6 Gbps	4.8 Gbps	2.4 Gbps	8.8 Gbps	13.6 Gbps
Forwarding Rate	13.6 Mpps	3.6 Mpps	1.8 Mpps	6.6 Mpps	13.6 Mpps
Full-Duplex Capabilities	All Ports	All Ports	All Ports	All Ports	All Ports
VLAN Maximum	64-port-based VLANS	64-port-based VLANS	64-port-based VLANS	64-port-based VLANS	64-port-based VLANS
FEC	Yes	Yes	Yes	Yes	Yes
802.1Q	Yes	Yes	Yes	Yes	Yes
Security	Port Security, with MAC aging, Private VLAN Edge, 802.11x, RADIUS, TACACS+, BPDU Guard, BPDU Scheduling, SPAN for Intrusion Detection, Spanning Tree Root Guard	Same as 2950T-48	Same as 2950T-48	Same as 2950T-48	Same as 2950T-48
Multicast	Same as 2950G-48-EI	Same as 2950G-48-EI	Same as 2950G-48-EI	Same as 2950G-48-EI	Same as 2950G-48-EI
QoS	802.1P, 4 egress queues, WRR, Strict Priority Scheduling	Same as 2950T-48	Same as 2950T-48	Same as 2950T-48	Same as 2950T-48
Management Capabilities	Express Setup, SPAN for Intrusion Detection, L2 Trace Route, VLAN 1 minimization, Auto configuration, SNMP, Telnet, RMON, CWSI, (CLI)-based out-of-band, embedded CMS	SNMP, Telnet, RMON, CWSI, (CLI)-based out-of-band, embedded CMS	Same as 2950-24	Same as 2950-24	Same as 2950-24
Software Image	Standard Image (SI)	Standard Image (SI)	Standard Image (SI)	Standard Image (SI)	Standard Image (SI)
Flash Memory	8 MB	8 MB	8 MB	8 MB	8 MB
CPU DRAM	16 MB	16 MB	16 MB	16 MB	16 MB
Embedded RMON	Same as 2950G-48-EI	Same as 2950G-48-EI	Same as 2950G-48-EI	Same as 2950G-48-EI	Same as 2950G-48-EI
Dimensions (H x W x D)	1.75 x 17.5 x 13 in.	1.75 x 17.5 x 11.8 in.	1.75 x 17.5 x 9.52 in.	1.75 x 17.5 x 9.52 in.	1.75 x 17.5 x 13 in.

Feature	2950C-24	2955 (T-12,C-12,S-12)
Fixed Ports	26-port (24 10/100 autosensing & 2 ports100BaseFX)	
Forwarding Bandwidth	5.2 Gbps	13.6 Gbps
Forwarding Rate	3.9 Mpps	2 Mpps
Full-Duplex Capabilities	All Ports	All Ports
VLAN Maximum	250-port-based VLANS	250-port-based VLANS
FEC	Yes	Yes
802.1Q	Yes	Yes
Security	Port Security, with MAC aging, Private VLAN Edge, ACL, 802.11x, IBNS, SSH, RADIUS, TACACS+, SNMPv3 (crypto), BPDU Guard, BPDU Scheduling, SPAN for Intrusion Detection, Spanning Tree Root Guard	Port Security, with MAC aging, Private VLAN Edge, 802.11x, RADIUS, TACACS+, SNMPv3 (non-crypto)
Multicast	Same as 2950G-48-EI	Same as 2950G-48-EI
QoS	802.1P, 4 egress queues, Weighted Round Robin, Strict Priority Scheduling,	Same As 2950T-48
Management Capabilities	Express Setup, SPAN for Intrusion Detection, L2 Trace Route, VLAN 1 minimization, Auto configuration,SNMP, Telnet, RMON, CWSI, (CLI)-based out-of-band, embedded CMS, RPSAN	Same as 2950-24
Software Image	Enhanced Image (EI)	Enhanced Image (EI)
Flash Memory	8 MB	16 MB
CPU DRAM	16 MB	32 MB
Embedded RMON	Same as Catalyst 2950G-48-EI	Same as Catalyst 2950G-48-EI
Dimensions (H x W x D)	1.75 x 17.5 x 11.8 in.	3.78x8.07x5.03in; connectors facing forward OR 5.03x8.07x3.78in; connectors facing downward

Selected Part Numbers and Ordering Information[1]

Catalyst 2950 Series Switches

WS-C2950G-48-EI	Catalyst 2950G-48 switch with 48 10/100 ports and 2 Gigabit Interface Converter (GBIC)-based GE ports, Enhanced Image
WS-C2950G-24-EI	Catalyst 2950G-24 switch with 24 10/100 ports and 2 GBIC ports, Enhanced Image
WS-C2950G-24-EI-DC	Catalyst 2950G-24-DC switch with 24 10/100 ports, 2 GBIC ports and DC Power, Enhanced Image
WS-C2950G-12-EI	Catalyst 2950G-12 switch with 12 10/100 ports and 2 GBIC ports, Enhanced Image
WS-C2950T-24	Catalyst 2950C-24T switch with 24 10/100 ports and two fixed 1000BaseT Uplink ports, Enhanced Image
WS-C2950C-24	Catalyst 2950C-24 switch with 24 10/100 ports and two fixed 100BaseFX Uplink ports, Enhanced Image
WS-C2950SX-48-SI	Catalyst 2950SX-48 switch with 48 10/100 ports and two fixed 1000BASE-SX Uplink ports, Standard Image
WS-C2950T-48-SI	Catalyst 2950T-48 switch with 48 10/100 ports and two fixed 10/100/1000BASE-T Uplink ports, Standard Image
WS-C2950SX-24	Catalyst 2950SX-24 switch with 24 10/00 ports and two fixed 1000BaseSX Uplink ports, Standard Image
WS-C2950-24	Catalyst 2950-24 switch with 24 10/100 ports, Standard Image
WS-C2950-12	Catalyst 2950-12 switch with 12 10/100 ports, Standard Image

Gigabit Interface Converters (GBICs)

WS-X3500-XL	GigaStack GBIC Gigabit Ethernet stacking GBIC and 50 cm cable
WS-G5484=	1000BaseSX GBIC short wavelength GBIC (multimode fiber only)
WS-G5486=	1000BaseLX/LH GBIC long wavelength/long haul GBIC (single or multimode fiber)
WS-G5487=	1000BaseZX GBIC extended-reach GBIC (single mode fiber only)
WS-G5483=	1000BaseT GBIC- Gigabit-Ethernet-over-copper GBIC

Redundant Power System (RPS)

PWR675-AC-RPS-N1=	675W Redundant Power Supply with 1 connector cable
VAB-RPS-1414=	1.2 meter cable for Cisco RPS 300 to external device connection

Cables/Accessories

CAB-RPS-1614=	1 RPS 675 connector cable 16/14
CAB-GS-50CM	50 centimeter cable for GigaStack GBIC
STK-RACKMOUNT-1RU=	Rack mount kit for 1 RU versions of Catalyst 2950, 3500 XL, 2900 XL, 1900, and FastHub 400 switches

Packaged SMARTnet 8x5xNBD Maintenance Contract

CON-SNT-PKG3	Packaged SMARTnet 8x5xNBD Maintenance for the Catalyst 2950G-12, 2950-24 and 2950-12
CON-SNT-PKG4	Packaged SMARTnet 8x5xNBD Maintenance for the Catalyst 2950G-24 and 2850G-24-DC
CON-SNT-PKG6	Packaged SMARTnet 8x5xNBD Maintenance for the Catalyst 2950G-48

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the *Distribution Product Reference Guide* at: http://www.cisco.com/dprg (limited country availability).

For More Information

See the Catalyst 2950 Series Web site: **http://www.cisco.com/go/catalyst2950**

Cisco Catalyst 2970 Series

The Cisco Catalyst 2970 Series switches are affordable Gigabit-to-the-desktop Ethernet switches that deliver wire-speed intelligent services for small and medium-sized businesses and enterprise branch offices. Featuring a complete set of intelligent services, the Cisco Catalyst 2970 Series switches can enhance network performance and increase productivity for today's knowledge workers by intelligently scaling beyond 100 Mbps.

Specifications

Feature	Catalyst 2970
Performance	Forwarding bandwidth: 28 Gbps (Cisco Catalyst 2970G-24TS), 24 Gbps (Cisco Catalyst 2970G24T)
	Forwarding rate based on 64-byte packets: 38.7 Mpps (Cisco Catalyst 2970G-24TS), 35.7 Mpps (Cisco Catalyst 2970G-24T)
	128 MB DRAM and 16 MB flash memory
	Up to 8000 MAC addresses configurable
	Up to 1000 IGMP groups and bridging entries configurable
	Configurable maximum transmission unit (MTU) of up to 9018 bytes (jumbo frames) for bridging on Gigabit Ethernet ports, and up to 1546 bytes for bridging on Fast Ethernet ports
Connectors and cabling	10BASE-T ports: RJ-45 connectors; 2-pair Category 3, 4, or 5 unshielded twisted-pair (UTP) cabling
	100BASE-TX ports: RJ-45 connectors; 2-pair Category 5 UTP cabling
	1000BASE-T ports: RJ-45 connectors; 2-pair Category 5 UTP cabling
	1000BASE-T SFP-based ports: RJ-45 connectors, 2-pair Category 5 UTP cabling
	1000BASE-SX, -LX/LH, -ZX, and CWDM SFP-based ports: LC fiber connectors (single-mode or multimode fiber)
	Management console port: RJ-45-to-DB9 cable for PC connections
Indicators	Per-port status LEDs: link integrity, disabled, activity, speed, and full-duplex indications. System-status LEDs: system, RPS, and bandwidth-utilization indications
Predicted mean time between failure (MTBF)	163,222 hrs (Cisco Catalyst 2970G-24TS)
	219,108 hrs (Cisco Catalyst 2970G-24T)
Power connectors	Customers can provide power to a switch by using either the internal power supply or the Cisco RPS 675. The connectors are located at the back of the switch.
Internal Power Supply Connector	Customers can provide power to a switch by using either the internal power supply or the Cisco RPS 675. The connectors are located at the back of the switch.
	Internal Power Supply Connector
	• The internal power supply is an autoranging unit.
	• The internal power supply supports input voltages between 100 and 240 VAC.
	• Use the supplied AC power cord to connect the AC power connector to an AC power outlet.
	• Cisco RPS 675 Connector
	• Offers connection for an optional Cisco RPS 675 that uses AC input and supplies DC output to the switch.
	• Offers a 675 W RPS that supports up to 6 external network devices and provides power to 1 failed device at a time.
	• Automatically senses when the internal power supply of a connected device fails and provides power to the failed device, preventing loss of network traffic.
	• Only the Cisco RPS 675 (Model PWR675-AC-RPS-N1=) should be attached to the RPS receptacle.
Power consumption	165 W (maximum), 563 BTUs per hour (Cisco Catalyst 2970G-24TS)
	135 W (maximum), 460 BTUs per hour (Cisco Catalyst 2970G-24T)
AC input voltage/frequency	100 to 127 or 200 to 240 VAC (autoranging), 50 to 60 Hz
DC input voltages	RPS input+12 V at 17 A (Cisco Catalyst 2970G-24TS)
	+12 V at 13 A (Cisco Catalyst 2970G-24T)
Dimensions (H x W x D)	Cisco Catalyst 2970G-24TS: 2.59 x 17.5 x 11.6 in. (6.58 x 44.5 x 29.5 cm)
	Cisco Catalyst 2970G-24T: 1.73 x 17.5 x 12.83 in. (4.39 x 44.5 x 32.6 cm)
Weight	Cisco Catalyst 2970G-24TS: 12.5 lb (5.68 kg)
	Cisco Catalyst 2970G-24T: 10 lb (4.54 kg)

For More Information

See the Catalyst 2970 Web site: **http://www.cisco.com/go/catalyst2970**

Cisco Catalyst 3500 Series XL

The Cisco Systems Catalyst 3500 series XL is a scalable line
of stackable 10/100 and Gigabit Ethernet switches that
delivers premium performance, flexibility, and manageability with unparalleled investment
protection. This line of low-cost, high-performance switching solutions provides stackable
switching through an independent high-speed stacking bus that preserves valuable desktop
ports. Cisco's breakthrough Switch Clustering technology expands the stacking domain
beyond a single wiring closet, enabling up to 16 interconnected Catalyst 3750, 3560, 3550,
2950, 3500 XL, 2950, 2900 XL and 1900 switches—regardless of geographic location—to
form a flexible, single IP managed network.

When to Sell

Sell This Product	When a Customer Needs These Features
Catalyst 3508G XL	• A stackable Gigabit Ethernet switch with eight GBIC-based ports for aggregating a group of Gigabit Ethernet switches and servers through Cisco GigaStack GBICs or standard 1000BASE-X GBICs
	• Dedicated, high-speed Gigabit Ethernet performance

Key Features

- 10.8 Gbps switch fabric, up to 8 Mpps forwarding rate
- Built-in Gigabit Ethernet ports accommodate a range of GBIC transceivers, including the Cisco GigaStack GBIC, 1000BASE-T, 1000BASE-SX and 1000BASE-LX/LH GBICs, and 1000BASE-ZX extended reach GBIC
- Low-cost, 2-port Cisco GigaStack GBIC offers a range of configurable stacking and performance options by delivering 1-Gbps connectivity in a daisy-chained connection or up to 2-Gbps in a dedicated, switch-to-switch connection
- Support for IEEE 802.1p technology for prioritization of mission-critical and time-sensitive application such as voice and telephony traffic

Competitive Products

- 3Com: SuperStack 3 Switch 3300 and 3900
- Hewlett Packard: ProCurve 2524, 2424M, 4000, and 8000
- Nortel: BayStack 450T and BPS 2000 switches

Specifications

Feature	Catalyst 3508G XL
Fixed Ports	8-port 1000BASE-X (GBIC)
Modular Slots	None
Backplane	10 Gbps
Stackable	Yes
Full-Duplex	All ports
VLAN Maximum	250 port-based VLANs or ISL/802.1Q trucks
FEC	Yes
Inter-Switch Link	Yes
In-Line Power	No
Management Capabilities	SNMP, Telnet, RMON, CWSI, (CLI)-based out-of-band, embedded Cisco Visual Switch Manager, Web-based interface
Processors	Cisco designed ASICs
Flash Memory	4 MB
CPU DRAM	8 MB
Embedded RMON	History, Events, Alarms, Statistics
Dimensions (HxWxD)	1.75 x 17.5 x 11.8 in

Selected Part Numbers and Ordering Information[1]

Catalyst 3500 Series XL Switches

WS-C3508G-XL-EN	8 1000X GBIC Slots

Catalyst 3500 Series XL Accessories

WS-X3500-XL	GigaStack GBIC
WS-G5484=	1000BASE-SX GBIC
WS-G5486=	1000BASE- LX/LH GBIC
WS-G5487=	1000BASE- ZX extended reach GBIC
WS-G5483=	1000BASE-T GBIC

Catalyst 3500 Series XL Basic Maintenance

CON-SNT-PKG4	Catalyst 3512 XL SMARTnet 8x5xNBD Maintenance
CON-SNT-PKG5	Catalyst 3524 XL and 3524-PWR XL SMARTnet 8x5xNBD Maintenance
CON-SNT-PKG6	Catalyst 3548 XL SMARTnet 8x5xNBD Maintenance
CON-SNT-PKG9	Catalyst 3508G XL SMARTnet 8x5xNBD Maintenance

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the *Distribution Product Reference Guide* at: http://www.cisco.com/dprg (limited country availability).

For More Information

See the Catalyst 3500 series XL Web site: **http://www.cisco.com/go/3500xl**

Cisco Catalyst 3550 Series Intelligent Ethernet Switches

The Cisco Catalyst 3550 Series Intelligent Ethernet Switches is a line of enterprise-class, stackable, multilayer switches that provide high availability, scalability, security and control to enhance the operation of the network. With a range of Fast Ethernet and Gigabit Ethernet configurations, the Catalyst 3550 Series can serve as both a powerful access layer switch for medium enterprise wiring closets and as a backbone switch for small networks. Now customers can deploy network-wide intelligent services, such as advanced quality of service, rate-limiting, Cisco security access control lists, multicast management, and high-performance IP routing—while maintaining the traditional LAN switching.

When to Sell

Sell This Product	When a Customer Needs These Features
Catalyst 3550 Series	• Enterprise-class intelligent services such as ACLs, advanced QoS, and rate-limiting • Cisco Cluster Management Suite (CMS) Software)
Catalyst 3550-48-EMI (Enhanced Multilayer Software Image)	• Advanced IP routing • High Port Density • Ideal as a powerful access layer switch for a medium enterprise wiring closet with routed uplinks
Catalyst 3550-48-SMI (Standard Multilayer Software Image)	• High Port Density • Ideal for a powerful access layer switch for a medium enterprise wiring closet • Basic IP routing
Catalyst 3550-24-EMI (Enhanced Multilayer Software Image)	• Advanced IP routing • Medium Port Density • Ideal for a powerful access layer switch for a medium enterprise wiring closet with routed uplinks
Catalyst 3550-24-SMI (Standard Multilayer Software Image)	• Medium Port Density • Ideal for a powerful access layer switch for a medium enterprise wiring closet • Basic IP routing
Catalyst 3550-24PWR-EMI (Enhanced Multilayer Software Image)	• Advanced IP routing • Medium Port Density • Integrated Power over Ethernet to Cisco IP telephones and Cisco wireless LAN access points • Ideal for a powerful access layer switch for a medium enterprise wiring closet with routed uplinks
Catalyst 3550-24PWR-SMI (Standard Multilayer Software Image)	• Medium Port Density • Integrated Power over Ethernet to Cisco IP telephones and Cisco wireless LAN access points • Ideal for a powerful access layer switch for a medium enterprise wiring closet • Basic IP routing
Catalyst 3550-24-DC-SMI (Standard Multilayer Software Image)	• Medium Port Density • DC powered, NEBS level 3 compliant • Basic IP routing

Sell This Product	When a Customer Needs These Features
Catalyst 3550-24-FX-SMI (Standard Multilayer Software Image)	• Medium Port Density • Ideal for 100FX aggregation • Basic IP routing
Catalyst 3550-12G	• High performance IP routing • Gigabit Ethernet aggregation using fiber • Ideal for stack aggregation, server aggregation, or as a backbone switch in a mid-sized network
Catalyst 3550-12T	• Advanced IP routing • Gigabit Ethernet aggregation using Category 5 copper cabling • Ideal for stack aggregation, server aggregation, or as a backbone switch in a mid-sized network
CD-3550-EMI	• Advanced IP routing • EMI upgrade kit for standard versions of the Catalyst 3550-24, 3550-24 PWR, 3550-24-DC, 3550-24-FX, and 3550-48 switches

Key Features

- Network control and bandwidth optimization via advanced Quality of Service (QoS), granular rate-limiting, Access Control Lists (ACLs), and multicast services
- Network security through a wide range of authentication methods, data encryption technologies, and access restriction features based on users, ports, and MAC addresses
- Network scalability through advanced routing protocols such as EIGRP, OSPF, BGP, and PIM (requires Enhanced Multilayer Software Image (EMI))
- Intelligent adaptability through Cisco Identity Based Networking Services (IBNS) offering greater flexibility and mobility to stratified users
- Lower Total Cost of Ownership (TCO) for IP Telephony and Wireless LAN deployments through integrated inline power (Catalyst 3550-24 PWR only)
- Easy switch configuration and deployment of advanced services through the embedded Cluster Management Suite (CMS) Software
- Stackable up to 9 switches with the Gigastack GBIC

Competitive Products

- Extreme Networks: Summit5i, Summit 24/48, Summit 48i
- Foundry: FastIron 4802
- Nortel: BPS 2000

Specifications

Feature	Catalyst 3550-48	Catalyst 3550-24	Catalyst 3550-24P WR	Catalyst 3550-12G	Catalyst 3550-12T	Catalyst 3550-24-DC	Catalyst 3550-24-FX
Fixed Ports	48 10/100 ports 2 GBIC-based Gigabit Ethernet ports	24 10/100 ports 2 GBIC-based Gigabit Ethernet ports	24 10/100 ports 2 GBIC-based Gigabit Ethernet ports	10 GBIC-based Gigabit Ethernet ports 2 10/100/1000 ports	10 10/100/1000 ports 2 GBIC-based Gigabit Ethernet ports	24 10/100 ports2 GBIC-based Gigabit Ethernet port	24 100FX MMF ports 2 GBIC-based Gigabit Ethernet port
Switching Fabric	13.6 Gbps	8.8 Gbps	8.8 Gbps	24 Gbps	24 Gbps	8.8 Gbps	8.8 Gbps
VLAN Maximum	1005	1005	1005	1005	1005	1005	1005
FEC/GEC	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GBICs	Gigastack, 1000BaseT, SX, LX/LH, ZX, CWDM	Gigastack, 1000BaseT, SX, LX/LH, ZX, CWDM	Gigastack, 1000BaseT, SX, LX/LH, ZX, CWDM	Gigastack, 1000BaseT, SX, LX/LH, ZX, CWDM	Gigastack, 1000BaseT, SX, LX/LH, ZX, CWDM	Gigastack, 1000BaseT, SX, LX/LH, ZX, CWDM	Gigastack, 1000BaseT, SX, LX/LH, ZX, CWDM
802.1Q and ISL	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pre-Standard POE	No	No	Yes	No	No	No	No
QoS	802.1p, DSCP, 4 egress Queues, WRR, Strict Priority Queuing,WRED	Same as 3550-48	Same as 3550-48	Same as 3550-48	Same as 3550-48	Same as 3550-48	Same as 3550-48
Multicast	IGMP Snooping, PIM (requires EMI), DVMRP (requires EMI), CGMP Server (requires EMI)	Same as 3550-48	Same as 3550-48	Same as 3550-48	Same as 3550-48	Same as 3550-48	Same as 3550-48

Feature	Catalyst 3550-48	Catalyst 3550-24	Catalyst 3550-24PWR	Catalyst 3550-12G	Catalyst 3550-12T	Catalyst 3550-24-DC	Catalyst 3550-24-FX
Management Capabilities	SNMP, Telnet, RMON, Cisco Works, SSHv2, embedded CMS, Express Setup	Same as 3550-48	Same as 3550-48	Same as 3550-48	Same as 3550-48	Same as 3550-48	Same as 3550-48
Flash Memory	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB
CPU DRAM	64 MB	64 MB	64 MB	64 MB	64 MB	64 MB	64 MB
Embedded RMON	History, Events, Alarms, Statistics	Same as 3550-48	Same as 3550-48	Same as 3550-48	Same as 3550-48	Same as 3550-48	Same as 3550-48
Dimensions (H x W x D)	1.75 x 17.5 x 16.3 in.	1.75 x 17.5 x 14.4 in.	1.75 x 17.5 x 17.4 in.	2.63 x 17.5 x 15.9 in.	2.63 x 17.5 x 15.9 in	1.75 x 17.5 x 14.4 in.	1.75 x 17.5 x 16.3 in.

Selected Part Numbers and Ordering Information[1]

Catalyst 3550 Series Intelligent Ethernet Switches

WS-C3550-48-SMI	Catalyst 3550-48 multilayer switch with 48 10/100 ports and 2 GBIC-based Gigabit Ethernet ports; SMI installed
WS-C3550-48-EMI	Catalyst 3550-48 multilayer switch with 48 10/100 ports and 2 GBIC-based Gigabit Ethernet ports; EMI installed
WS-C3550-24-SMI	Catalyst 3550-24 multilayer switch with 24 10/100 ports and 2 GBIC-based Gigabit Ethernet ports; SMI installed
WS-C3550-24-EMI	Catalyst 3550-24 multilayer switch with 24 10/100 ports and 2 GBIC-based Gigabit Ethernet ports; EMI installed
WS-C3550-24PWR-SMI	Catalyst 3550-24 multilayer switch with 24 10/100 ports and 2 GBIC-based Gigabit Ethernet ports; integrated inline power; SMI installed
WS-C3550-24PWR-EMI	Catalyst 3550-24 multilayer switch with 24 10/100 ports and 2 GBIC-based Gigabit Ethernet ports; integrated inline power; EMI installed
WS-C3550-24-DC-SMI	Catalyst 3550-24-DC multiplayer switch with 24 10/100 ports and 2 GBIC-based Gigabit Ethernet ports; SMI installed; DC-powered
WS-C3550-24-FX-SMI	Catalyst 3550-24-FX multilayer switch with 24100FX multimode fiber ports and 2 GBIC-based Gigabit Ethernet ports; SMI installed
WS-C3550-12G	10 GBIC-based Gigabit Ethernet ports and 2 10/100/1000 ports; EMI installed
WS-C3550-12T	10-10/100/1000BaseT ports and 2 GBIC-based Gigabit Ethernet ports; EMI installed
CD-3550-EMI=	EMI upgrade kit for the standard versions of the Catalyst 3550-24, 3550-48, 3550-24PWR, 3550-24-DC, and 3550-24-FX

Gigabit Interface Converters (GBICs)

WS-X3500-XL	GigaStack Stacking GBIC and 50 cm cable
WS-G5484=	1000BaseSX GBIC-short wavelength GBIC (multimode fiber only)
WS-G5486=	1000BaseLX/LH GBIC-long wavelength/long haul GBIC (single or multimode fiber)
WS-G5487=	1000BaseZX GBIC-extended reach GBIC (single mode fiber only)
WS-G5483=	1000BaseT GBIC-Gigabit Ethernet over Copper GBIC

Redundant Power System (RPS)

PWR675-AC-RPS-N1=	675W Redundant Power Supply with 1 connector cable
VAB-RPS-1614=	1.2 meter connector cable for Cisco RPS 675 to external device connection

Spare Rack Mount Kits for the Catalyst 3550

RCKMNT-3550-1.5RU=	Rack mount kit for the Catalyst 3550-12T and 3550-12G switches
RCKMNT-1RU=	Rack mount kit for the Catalyst 3550-24, 3550-48, 3550-24PWR, 3550-24-DC, and 3550-24-FX switches

Packaged SMARTnet 8x5xNBD Maintenance Contract for Two-Tier Customers

CON-SNT-PKG9	Packaged SMARTnet 8x5xNBD for the WS-C3550-12T and WS-C3550-12G
CON-SNT-PKG4	Packaged SMARTnet 8x5xNBD for the WS-C3550-24-SMI and WS-C3550-24PWR-SMI
CON-SNT-PKG5	Packaged SMARTnet 8x5xNBD for the WS-C3550-24-DC-SMI
CON-SNT-PKG6	Packaged SMARTnet 8x5xNBD for the WS-C3550-24-EMI, WS-C3550-24PWR-SMI and WS-C3550-48-SMI
CON-SNT-PKG7	Packaged SMARTnet 8x5xNBD for the WS-C3550-48-EMI and WS-C3550-24-FX-SMI

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the *Distribution Product Reference Guide* at: http://www.cisco.com/dprg (limited country availability).

For More Information

See the Catalyst 3550 Series Web site: **http://www.cisco.com/go/cat3550**

Cisco Catalyst 3750 Series Ethernet Switches

The Cisco Catalyst 3750 Series switches are an innovative product line that improves LAN operating efficiency by combining industry-leading ease of use and the highest resiliency available for stackable switches. This product series represents the next generation in desktop switches, and features Cisco StackWise™ technology, a 32-Gbps stack interconnect that allows customers to build a unified, highly resilient switching system-one switch at a time.

When to Sell

Sell This Product	When a Customer Needs These Features
Catalyst 3750-24TS	For networks requiring low-density access with switch stacking capability, Layer 2+ or L3 features, and 1 or more fiber uplinks.
Catalyst 3750-24PS	For networks requiring low-density access with switch stacking capability, Layer 2+ or L3 features, Power over Ethernet (PoE), and 1 or more fiber uplinks.
Catalyst 3750-48TS	For networks requiring medium-density access with switch stacking, Layer 2+ or L3 features, and 1 or more fiber uplinks.
Catalyst 3750-48PS	For networks requiring medium-density access with switch stacking capability, Layer 2+ or L3 features, Power over Ethernet (PoE), and 1 or more fiber uplinks.
Catalyst 3750G-24T	For networks requiring low-density Layer 2+ or L3 Gigabit Ethernet to the desktop (GTTD) or Ethernet aggregation with stacking capability without any uplinks.
Catalyst 3750G-24TS-1U	For networks requiring low-density Layer 2+ or L3 GTTD or Ethernet aggregation with stacking capability and fiber uplinks in a 1RU form factor
Catalyst 3750G-24TS	For networks requiring low-density Layer 2+ or L3 GTTD or Ethernet aggregation with stacking capability and fiber uplinks in a 1.5RU form factor.
Catalyst 3750G-24PS	For networks requiring low-density Layer 2+ or L3 GTTD or Ethernet aggregation with stacking capability, PoE, and fiber uplinks.
Catalyst 3750G-48TS	For networks requiring medium-density Layer 2+ or L3 GTTD or Ethernet aggregation with stacking capability and fiber uplinks.
Catalyst 3750G-48PS	For networks requiring medium-density Layer 2+ or L3 GTTD or Ethernet aggregation with stacking capability, PoE, and fiber uplinks.
Catalyst 3750G-16TD	For networks requiring low-density L2+ or L3 GTTD or Ethernet aggregation with stacking capability and a 10 GE uplink
Catalyst 3750G-12S	For aggregation of wiring closet switches with optical connectivity and stacking

Key Features

- Ease of Use—"Plug-and-Play" Configuration; A working stack is self-managing and self-configuring. When switches are added or removed, the master switch automatically updates all the routing tables to reflect changes. Upgrades are applied universally and simultaneously to all members of the stack.
- Scalability—Fast Ethernet to Gigabit Ethernet
- Mix-and-Match Switch Types—Pay as You Expand Your Network
- Availability—Non-Stop Performance at Layer 2 and Layer 3
- Smart Multicast—With Cisco StackWise technology, offers greater efficiency for multicast applications such as video. Each data packet is put on to the backplane only once, which provides more effective support for more data streams.
- Superior Quality of Service—Across the Stack and at Wire Speed; Gigabit Ethernet speed with intelligent services; Mechanisms for marking, classification, and scheduling deliver best-in-class performance for data, voice, and video traffic—all at wire speed.
- Security—Granular Control for the Access Environment; Supports a comprehensive set of security features for connectivity and access control, including ACLs, authentication, port-level security, and identity-based network services with 802.1x and extensions.
- Single IP Management—Many Switches, One Address
- Jumbo Frames—Support for High-Demand Applications
- IPv6 Capable

Competitive Products

- Extreme Networks: Summit5i, Summit 24/48, Summit 48i
- Foundry: FastIron 4802
- Nortel: 5510/5520

Specifications

Feature	Catalyst 3750-24TS	Catalyst 3750-24PS	Catalyst 3750-48TS	Catalyst 3750-48PS	Catalyst 3750G-24T	Catalyst 3750G-24TS
Fixed Ports	24 10/100	24 1/10	48 10/100	48 1/10	24 10/100/1000	24 10/100/1000
Uplinks	2 SFP	2 SFP	4 SFP	4 SFP	0	4 SFP
Switching Fabric	32 Gbps	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
VLAN Maximum	1005	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
FEC/GEC	Yes	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
SFPs	1000BaseT, SX, LX/LH, ZX, CWDM, 100BaseFX	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
802.1Q and ISL	Yes	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
PoE (Cisco prestandard and IEEE 802.3af)	No	Yes	No	Yes	No	No
QoS	802.1p, DSCP, 4 egress Queues, SRR, Strict Priority Queuing,WTD	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
Multicast	IGMP Snooping, PIM (requires EMI), DVMRP (requires EMI), CGMP Server (requires EMI)	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
Management Capabilities	SNMP, Telnet, RMON, CWSI, CLI-based out-of-band, Cisco Network Assistant (CAN)	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
Flash Memory	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB
CPU DRAM	128 MB	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
Embedded RMON	History, Events, Alarms, Statistics	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
Dimensions (H x W x D)	1.73 x 17.5 x 11.83 in.	1.73 x 17.5 x 11.83 in.	1.73 x 17.5 x 11.83 in.	1.73 x 17.5 x 14.83 in	1.73 x 17.5 x 12.83 in.	2.59 x 17.5 x 11.6 in.

Feature	Catalyst 3750G-24TS-1U	Catalyst 3750G-24PS	Catalyst 3750G-48TS	Catalyst 3750G-48PS	Catalyst 3750G-16TD	Catalyst 3750G-12S
Fixed Ports	24 10/100/1000	24 10/100/1000	48 10/100/1000	48 10/100/1000	16 10/100/1000	0
Uplinks	4 SFP	4 SFP	4 SFP	4 SFP	1 10GE XENPAK	12 SFP
Switching Fabric	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
VLAN Maximum	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
FEC/GEC	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
SFPs	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
802.1Q and ISL	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
PoE (Cisco prestandard and IEEE 802.3af)	No	Yes	No	Yes	No	No
QoS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
Multicast	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
Management Capabilities	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
Flash Memory	32 MB	32 MB	32 MB	32 MB	16 MB	16 MB
CPU DRAM	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
Embedded RMON	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS	Same as 3750-24TS
Dimensions (H x W x D)	1.73 x 17.5 x 14.9 in.	1.73 x 17.5 x 14.9 in.	1.73 x 17.5 x 16.1 in.	1.73 x 17.5 x 16.1 in.	1.73 x 17.5 x 16.1 in.	1.73 x 17.5 x 12.83 in.

Selected Part Numbers and Ordering Information[1]

Catalyst 3750 Series Ethernet Switches

WS-C3750G-16TD-S	16 Ethernet 10/100/1000 ports and one 10 Gigabit Ethernet XENPAK port; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 rack unit (RU) stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; SMI installed; Basic RIP and static routing, upgradable to full dynamic IP routing
WS-C3750G-16TD-E	16 Ethernet 10/100/1000 ports and one 10 Gigabit Ethernet XENPAK port; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 rack unit (RU) stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; EMI installed; Full dynamic IP routing
WS-C3750G-48TS-S	48 Ethernet 10/100/1000 ports and 4 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 rack unit (RU) stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; SMI installed; Basic RIP and static routing, upgradable to full dynamic IP routing
WS-C3750G-48TS-E	48 Ethernet 10/100/1000 ports and 4 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 rack unit (RU) stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; EMI installed; Full dynamic IP routing
WS-C3750G-48PS-S	48 Ethernet 10/100/1000 ports with IEEE 802.3af and Cisco prestandard PoE and 4 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 rack unit (RU) stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; SMI installed; Basic RIP and static routing, upgradable to full dynamic IP routing
WS-C3750G-48PS-E	48 Ethernet 10/100/1000 ports with IEEE 802.3af and Cisco prestandard PoE and 4 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 rack unit (RU) stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; EMI installed; Full dynamic IP routing
WS-C3750G-24TS-S1U	24 Ethernet 10/100/1000 ports and 4 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 RU stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; Standard Multilayer Software Image (SMI) installed; Basic RIP and static routing, upgradable to full dynamic IP routing
WS-C3750G-24TS-E1U	24 Ethernet 10/100/1000 ports and 4 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 rack units (RU) stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; EMI installed; Full dynamic IP routing
WS-C3750G-24PS-S	24 Ethernet 10/100/1000 ports with IEEE 802.3af and Cisco prestandard PoE and 4 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 rack unit (RU) stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; SMI installed; Basic RIP and static routing, upgradable to full dynamic IP routing
WS-C3750G-24PS-E	24 Ethernet 10/100/1000 ports with IEEE 802.3af and Cisco prestandard PoE and 4 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 rack unit (RU) stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; EMI installed; Full dynamic IP routing
WS-C3750G-24TS-E	24 Ethernet 10/100/1000 ports and 4 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1.5 rack units (RU) stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; EMI installed; Full dynamic IP routing
WS-C3750G-24TS-S	24 Ethernet 10/100/1000 ports and 4 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1.5 RU stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; Standard Multilayer Software Image (SMI) installed; Basic RIP and static routing, upgradable to full dynamic IP routing
WS-C3750G-24T-E	24 Ethernet 10/100/1000 ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 RU stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; EMI installed; Full dynamic IP routing
WS-C3750G-24T-S	24 Ethernet 10/100/1000 ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 RU stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; SMI installed; Basic RIP and static routing, upgradable to full dynamic IP routing
WS-C3750G-12S-E	12 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 rack unit (RU) stackable multilayer switch; Delivers enterprise-class intelligent services to the network edge; EMI installed, provides full dynamic IP routing
WS-C3750G-12S-S	12 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 rack unit (RU) stackable multilayer switch; Delivers enterprise-class intelligent services to the network edge; SMI installed, provides basic RIP and static routing, upgradable to full dynamic IP routing
WS-C3750-48TS-E	48 Ethernet 10/100 ports and 4 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 RU stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; EMI installed; Provides full dynamic IP routing
WS-C3750-48TS-S	48 Ethernet 10/100 ports and 4 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 RU stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; SMI installed; Basic RIP and static routing, upgradable to full dynamic IP routing
WS-C3750-48PS-E	48 Ethernet 10/100 ports with IEEE 802.3af and Cisco prestandard PoE and 4 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 RU stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; EMI installed; Provides full dynamic IP routing
WS-C3750-48PS-S	48 Ethernet 10/100 ports with IEEE 802.3af and Cisco prestandard PoE and 4 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 RU stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; SMI installed; Basic RIP and static routing, upgradable to full dynamic IP routing
WS-C3750-24TS-E	24 Ethernet 10/100 ports and 2 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 RU stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; EMI installed; Full dynamic IP routing
WS-C3750-24TS-S	24 Ethernet 10/100 ports and 2 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 RU stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; SMI installed; Basic RIP and static routing, upgradable to full dynamic IP routing
WS-C3750-24PS-E	24 Ethernet 10/100 ports with IEEE 802.3af and Cisco prestandard PoE and 4 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 RU stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; EMI installed; Provides full dynamic IP routing
WS-C3750-24PS-S	24 Ethernet 10/100 ports with IEEE 802.3af and Cisco prestandard PoE and 4 SFP-based Gigabit Ethernet ports; 32-Gbps, high-speed stacking bus; Innovative stacking technology; 1 RU stackable, multilayer switch; Enterprise-class intelligent services delivered to the network edge; SMI installed; Basic RIP and static routing, upgradable to full dynamic IP routing

PWR675-AC-RPS-N1=	Cisco Redundant Power System 675 (RPS 675) with 1 connector cable
CAB-RPS-1614=	1.2 meter cable for Cisco RPS 675 to external device connection
CD-3750G-EMI=	Enhanced Multilayer Software Image (EMI) upgrade kit for standard versions of the Catalyst 3750G-24TS, 3750G-24T, 3750G-24TS-1U, 3750G-24PS, 3750G-12S, and 3750G-16TD switches; Provides advanced IP routing
CD-3750-EMI=	Enhanced Multilayer Software Image (EMI) upgrade kit for standard versions of the Catalyst 3750-48TS, 3750-24TS, 3750-48PS, and 3750-24PS switches; Provides advanced IP routing
CD-3750G-48EMI=	Enhanced Multilayer Software Image (EMI) upgrade kit for standard versions of the Catalyst 3750G-48TS and 3750G-48PS
CAB-STACK-50CM=	Cisco StackWise 50CM Stacking Cable
CAB-STACK-1M=	Cisco StackWise 1M Stacking Cable
CAB-STACK-3M=	Cisco StackWise 3M Stacking Cable
RCKMNT-3550-1.5RU=	Spare rack mount kit for the Catalyst 3550G-24TS
RCKMNT-1RU=	Spare rack mount kit for the Catalyst 3750 1RU switches
RCKMNT-REC-1.5RU=	1.5RU recessed rack mount kit for the Catalyst 2970, 3550, 3750
RCKMNT-REC-1RU=	1RU recessed rack mount kit for the Catalyst 2970, 3550, 3750
GLC-LH-SM=	GE SFP, LC connector LH transceiver
GLC-SX-MM=	GE SFP, LC connector SX transceiver
GLC-ZX-SM=	GE SFP, LC connector ZX transceiver
GLC-T=	GE SFP, RJ45 connector, 10/100/1000BT transceiver
CWDM-SFP-1470=	Cisco CWDM SFP 1470 nm; Gigabit Ethernet and 1G/2G FC (Grey)
CWDM-SFP-1490=	Cisco CWDM SFP 1490 nm; Gigabit Ethernet and 1G/2G FC (Violet)
CWDM-SFP-1510=	Cisco CWDM SFP 1510 nm; Gigabit Ethernet and 1G/2G FC (Blue)
CWDM-SFP-1530=	Cisco CWDM SFP 1530 nm; Gigabit Ethernet and 1G/2G FC (Green)
CWDM-SFP-1550=	Cisco CWDM SFP 1550 nm; Gigabit Ethernet and 1G/2G FC (Yellow)
CWDM-SFP-1570=	Cisco CWDM SFP 1570 nm; Gigabit Ethernet and 1G/2G FC (Orange)
CWDM-SFP-1590=	Cisco CWDM SFP 1590 nm; Gigabit Ethernet and 1G/2G FC (Red)
CWDM-SFP-1610=	Cisco CWDM SFP 1610 nm; Gigabit Ethernet and 1G/2G FC (Brown)
CSS5-CABLX-LCSC=	CSS11500 10-Meter Fiber Single Mode LX LC-to-SC Connectors
CSS5-CABSX-LC=	CSS11500 10-Meter Fiber Multimode SX LC Connectors
CSS5-CABSX-LCSC=	CSS11500 10-Meter Fiber Multimode SX LC-to-SC Connectors
CAB-SM-LCSC-1M	1-Meter Fiber Singlemode LC-to-SC Connectors
CAB-SM-LCSC-5M	5-Meter Fiber Singlemode LC-to-SC Connectors

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For More Information

See the Catalyst 3750 Series Web site: **www.cisco.com/go/catalyst3750**

Cisco Catalyst 4500 Series

The Catalyst 4500 Series includes four Catalyst chassis: Catalyst 4510R (10-slot: redundant Supervisor capable), Catalyst 4507R (7-slot: redundant Supervisor capable), Catalyst 4506 (6-slot) and Catalyst 4503 (3-slot). The Catalyst 4500 extends control to the Enterprise LAN Access, SMB core and Layer 3 aggregation points. A variety of network infrastructure solutions are enabled by the Catalyst 4500 Series including: IP Telephony, Power Over Ethernet, 10/100/1000 to the desktop, Wireless LAN, NetFlow Services and Metro Ethernet Switching.

When to Sell

Sell This Product	When a Customer Needs These Features
Catalyst 4510R	• When high performance, port density, and network resiliency is crucial to customer success • Port density up to 384-10/100, 100-FX, 1000BASE-X or 10/100/1000BASE-T and 2 ports 10 GbE • Layer 2 and Layer 3 Cisco Express Forwarding (CEF)-based switching up to 136 Gbps, 102 Mpps
Catalyst 4507R	• When network resiliency via redundant Supervisor Engines is crucial to customer success • Port density up to 240-10/100, 100-FX, 1000BASE-X or 10/100/1000BASE-T and 2 ports 10 GbE • Layer 2 and Layer 3 Cisco Express Forwarding (CEF)-based switching up to 100 Gbps, 72 Mpps
Catalyst 4506	• Port density up to 240-10/100, 100-FX, 1000BASE-X or 10/100/1000BASE-T and 2 ports 10 GbE • Layer 2 and Layer 3 Cisco Express Forwarding (CEF)-based switching up to 100 Gbps, 75 Mpps

Sell This Product	When a Customer Needs These Features
Catalyst 4503	• Port density up to 116-10/100, 100-FX, 1000BASE-X or 10/100/1000BASE-T and 2 ports 10 GbE
	• Layer 2 and Layer 3 Cisco Express Forwarding (CEF)-based switching up to 64 Gbps, 48 Mpps

Note: Compatible sparing between Catalyst 4510R, 4507R, 4506, and 4503 chassis provides investment protection with common Supervisor Engines, power supplies and switching line cards.

Competitive Products

• Extreme Networks: Alpine 3802, Alpine 3804, and Alpine 3808
• Foundry: FastIron 400/800, FastIron II, II+, III

• Hewlett Packard: Procurve 5300XL, 4108GL
• Nortel: Passport 8100/8300

Specifications

Feature	Supervisor II-Plus-TS (WS-X4013+TS)	Supervisor II-Plus (WS-X4013+)	Supervisor IV (WS-X4515)	Supervisor V (WS-X4516)	Supervisor V-10GE (WS-X4516-10GE)
Switching Capacity & Throughput	64 Gbps, 48 Mpps	64 Gbps, 48 Mpps	64 Gbps, 48 Mpps	96 Gbps, 72 Mpps	136 Gbps, 102 Mpps
Multilayer Switching	Basic L2/3/4 Services	Basic L2/3/4 Services	Enhanced L2/3/4 Services & Routing	Enhanced L2/3/4 Services & Routing	Enhanced L2/3/4 Services & Routing
(E)IGRP, OSPF, IS:IS, BGP	No	No	Yes	Yes	Yes
Platform Support	Catalyst 4503 ONLY	Catalyst 4507R, 4506, 4503	Catalyst 4507R, 4506, 4503	Catalyst 4507R, 4506, 4503	Catalyst 4510R,4507R 4506, 4503
Supervisor Redundancy	No	4507R Only	4507R Only	4507R and 4510R Only	4507R and 4510R Only
Operating System	IOS	IOS	IOS	IOS	IOS
QoS	4Q/Port, policing, shaping, congestion avoidance	4Q/Port, policing, shaping, congestion avoidance	4Q/Port, policing, shaping, congestion avoidance	4Q/Port, policing, shaping, congestion avoidance	4Q/Port, policing, shaping, congestion avoidance
CPU	266 MHz	266 MHz	333 MHz	400 MHz	800 MHz
NetFlow Support	No	No	Yes (Optional Daughter Card)	Yes (Optional Daughter Card)	Yes (Built-in functionality; no Daughter Card Required)
ISL	Yes	Yes	Yes	Yes	Yes
ACLS	Yes	Yes	Yes	Yes	Yes
IP FIB entries	32K	32K	128K	128K	128K
MAC Addresses	32K Unicast, 16K Multicast	32K Unicast, 16K Multicast	32K Unicast 16K Multicast	32K Unicast, 16K Multicast	32K Unicast, 16K Multicast
On-Board Flash	32 MB	32 MB	64 MB	64 MB	64 MB
Compact Flash Support	Yes	Yes	Yes	Yes	Yes
Non-Blocking Supervisor Ports	12x10/100/1000 BASET, 2xGE ports PoE, 8xSFP	2xGE ports	2xGE ports	2x10GE or 4xGE on Supervisor V-10GE

Feature	Catalyst 4510R	Catalyst 4507R	Catalyst 4506	Catalyst 4503
Modular Slots	Up to 384 ports; 8 linecard slots	Up to 240 ports, 5 linecard slots	Up to 240 ports; 5 linecards slots	Up to 116 ports, 2 linecard slots
Available Modules	Supervisor Engine V and V-10GE	Supervisor Engine II-Plus IV, V, V-10GE	Supervisor Engine II-Plus IV, V, V-10GE	Supervisor Engine II-Plus-TS, IV, V, V-10GE
Redundant Supervisor Capable	Yes	Yes	No	No
Backplane Capacity	136 Gbps	100 Gbps	100 Gbps	64 Gbps
Stackable	No	No	No	No
Hot-Swappable Power Supplies	Yes	Yes	Yes	Yes
1+1 Power Supply Protection	Yes	Yes	Yes	Yes
Power Over Ethernet (PoE) Support	Up to 15.4W of PoE on every port	Up to 15.4W of PoE on every port	Up to 15.4W of PoE on every port	Up to 15.4W of PoE on every port
Embedded RMON	Statistics, History, Alarm, Events	Statistics, History, Alarm, Events	Statistics, History, Alarm, Events	Statistics, History, Alarm, Events
Dimensions (H x W x D)	24.35 x 17.31 x 12.50 in. (61.84 x 43.97 x 31.70 cm)	19.19 x 17.31 x 12.50 in (48.74 x 43.97 x 31.70 cm)	17.38 x 17.31 x 12.50 in (44.13 x 43.97 x 31.70 cm)	12.25 x 17.31 x 12.50 in (31.12 x 43.97 x 31.70 cm)

Selected Part Numbers and Ordering Information[1]

Catalyst 4500 Series Switches

WS-C4510R	Catalyst 4500 Chassis (10-Slot),fan, no p/s, Red Sup Capable
WS-C4507R	Catalyst 4500 Chassis (7-Slot),fan, no p/s, Red Sup Capable
WS-C4506	Catalyst 4500 Chassis (6-Slot),fan, no p/s
WS-C4503	Catalyst 4500 Chassis (3-Slot),fan, no p/s

Catalyst 4500 Series Common Equipment

WS-X4013+=	Catalyst 4500 Supervisor II-Plus, 2GE, RJ-45
WS-X4013+-TS=	Catalyst 4500 Supervisor Engine II-Plus TS (for Catalyst 4503 chassis only)
WS-X4515=	Catalyst 4500 Supervisor IV, 2GE, RJ-45
WS-X4516=	Catalyst 4500 Supervisor V, 2GE, RJ-45
WS-X4516-10GE=	Catalyst 4500 Supervisor V, 2x10GE, RJ-45
WS-F4531=	Catalyst 4500 NetFlow Services card for Supervisor Engine IV/V
PWR-C45-1000AC=	Catalyst 4500 1000W AC Power Supply (Data Only)
PWR-C45-1400AC=	Catalyst 4500 1400W AC Power Supply (Data Only)
PWR-C45-1300ACV=	Catalyst 4500 1300W AC Power Supply (with PoE)
PWR-C45-2800ACV=	Catalyst 4500 2800W AC Power Supply (with PoE)

Catalyst 4500 Series Line Card Modules and GBICs

WS-X4148-RJ=	Catalyst 4500 10/100 Fast Ethernet Module, 48 Ports (RJ-45)
WS-X4148-RJ21=	Catalyst 4500 Telco switch module, 48-port 10/100 (4xRJ21)
WS-X4232-GB-RJ=	Catalyst 4500 E/FE/GE Module, 2-GE (GBIC), 32-10/100 FE (RJ-45)
WS-X4232-RJ-XX=	Catalyst 4500 FE Base Module, 32-10/100(RJ45)+ Modular Uplink slot
WS-X4302-GB=	Catalyst 4500 Gigabit Ethernet Module, 2-Ports (GBIC)
WS-X4306-GB=	Catalyst 4500 Gigabit Ethernet Module, 6 Ports (GBIC)
WS-X4506-GB-T=	Catalyst 4500 Gigabit Ethernet Module, 6 Ports: 10/100/1000BASET PoE or SFP (Alternatively Wired)
WS-X4424-GB-RJ-45=	Catalyst 4500 24 port 10/100/1000 Auto-Sensing Module (RJ45)
WS-X4548-GB-RJ45=	Catalyst 4500 48 port 10/100/1000 Auto-Sensing Module (RJ45)
WS-X4124-RJ45=	Catalyst 4500 10/100 Module, 24-Ports(RJ45)
WS-X4224-RJ45V=	Catalyst 4500 PoE 802.3af 10/100 24-ports (RJ45)
WS-X4524-GB-RJ45V=	Catalyst 4500 PoE 802.3af 10/100/1000, 24-Ports (RJ45)
WS-X4248-RJ21V=	Catalyst 4500 PoE 802.3af 10/100/1000, 48-Ports (RJ45)
WS-X4248-RJ45V=	Catalyst 4500 PoE 802.3af 10/100/1000, 48-Ports (RJ45)
WS-X4548-GB-RJ45V=	Catalyst 4500 PoE 802.3af 10/100/1000, 48-Ports (RJ45)
WS-X4418-GB=	Catalyst 4500 GE Module, Server Switching 18 Ports (GBIC)
WS-X4448-GB-SFP=	Catalyst 4500 48-Port GE 1000BASE-X (SFP sold separately)

Catalyst 4500 Series Software

S4KL3-12.2(20)EWA=	Cisco IOS BASIC L3 SW Cat4500 SUP II-Plus/3/4(RIP,St.Routes,IPX,AT)
S4KL3E-12.2(20)EWA=	Cisco IOS ENHANCED L3 SW Cat4500 SUP3/4(OSPF,IGRP,EIGRP,IS-IS)

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For More Information

See the Catalyst 4500 series Web site:
http://www.cisco.com/en/US/products/hw/switches/ps4324/index.html

Cisco Catalyst 4900 Series — Fixed Configuration

The Cisco Catalyst 4948 is a wire-speed, low-latency, 1 RU fixed configuration switch for rack optimized server switching. Based on the proven Catalyst 4500 Series hardware and software architecture. The Catalyst 4948 series offers exceptional performance and reliability for low density, multilayer aggregation of high performance servers and workstations.

When to Sell

Sell This Product	When a Customer Needs These Features
Catalyst 4948	• Advanced wirespeed, non-blocking Layer 2/3/4 10/100/1000 Gigabit Ethernet performance with intelligent Cisco IOS services, reliability & serviceability with optional internal AC and DC 1+1 hot swappable power supplies and a hot swappable fan tray with redundant fans

Key Features

- Catalyst 4948:
  - Wire-speed performance with 96 Gbps of dedicated bandwidth for nonblocking Layer 2/3/4 Gigabit Ethernet concentration, redundant internal AC or DC power supplies with hot swappable fan tray, and SFP flexibility on fiber port interfaces covering a wide range of cabling distances

Competitive Products

- Extreme Networks: Summit 400
- Foundry: FWS X448

Specifications

Feature	Catalyst 4948
Fixed Ports	48 10/100/1000 & 4 SFP ports (Shared)
Backplane Capacity	96 Gbps
Stackable	No
Power Supply Redundancy	Yes. 1+1 AC or DC
Fan Tray	Hot Swappable with redundant fans
EIGRP, OSPF, IS:IS, BGP	Yes. Enhanced Software required
Management Ports	Dedicated 10/100 console port and 10/100 management port for disaster recovery
Dimensions (H x W x D)	1.75 in. x 17.3 in. x 16.1 in. (4.45cm. x 43.91 cm. x 40.99 cm.)

Selected Part Numbers and Ordering Information[1]

Catalyst 4900 Switch Series

WS-C4948-S	Cisco Catalyst 4948, std multilayer software image (RIP, static routes, IPX, AppleTalk), one AC power supply, fan tray
WS-C4948-E	Cisco Catalyst 4948, enhanced multilayer software image (OSPF, EIGRP, IS-IS, BGP), one AC power supply, fan tray
WS-C4948	Cisco Catalyst 4948, optional software image, optional power supplies, fan tray
S49L3E-12220EWA(=)	Enhanced multilayer software image: OSPF, IS-IS, EIGRP, BGP
PWR-C49-300AC(=)	Cisco Catalyst 4900 300-Watt AC power supply
PWR-C49-300DC(=)	Cisco Catalyst 4900 300-Watt DC power supply

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For More Information

See the Catalyst 4000 series Web site: **http://www.cisco.com/go/cat4000**

Cisco Catalyst 6500 Series

The Catalyst 6500 Family delivers highly available secure converged network services for the Enterprise and Service Provider networks. Designed to address the increased requirements for gigabit scalability, high-availability, rich services, and multilayer switching in backbone, distribution, and wiring closet topologies as well as datacenter environments, the Catalyst 6500 Family delivers exceptional scalability and price/performance, supporting a wide range of interface densities, performance, and integration of powerful service modules. The Catalyst Family delivers a wide range of intelligent switching solutions, enabling corporate intranets, extranets, and the internet for multimedia, mission-critical data, and voice applications.

When to Sell

Sell This Product	When a Customer Needs These Features
Catalyst 6513-E	• A high capacity chassis for Ethernet connectivity, with slots to spare for services modules providing network security and management
Catalyst 6509-E	• A traditional chassis for the wiring closet, distribution and core, data center, and WAN edge
Catalyst 6506-E	• A traditional chassis for the wiring closet, distribution and core, data center, and WAN edge
Catalyst 6503-E	• A low-density, wiring-closet chassis sharing interface modules and supervisor engines with larger chassis for common sparing

Key Features

- Supervisor Engine 720—Position for enterprise core, distribution, and data centers: Up to 720 Gbps Switch Fabric Connection; 400 Mpps; Supports new accelerated Cisco Express Forwarding (CEF720) and distributed Cisco Express Forwarding (dCEF720) interface modules; IPv6 and MPLS in hardware
- Supervisor Engine 2 MSFC2—Position for enterprise distribution, data centers, and WAN edge: Up to 256 Gbps Switch Fabric Connection with SFM; 210 Mpps; Supports distributed Cisco Express Forwarding (dCEF256) interface modules; Supports Layer 3 routing protocols
- Supervisor Engine 2 PFC2—Position for premium wiring closet and data center access; Up to 256 Gbps Switch Fabric Connection with SFM; 30 Mpps Centralized Forwarding using Cisco Express Forwarding (CEF) in hardware
- Supervisor Engine 32—Position for , wiring-closet: 32-Gbps shared bus connection to modules; 15 Mpps; Centralized Layer 2, Layer 3 forwarding and comes in two models, either 8-port 1GE model or 2-port 10GbE uplinks

Competitive Products

- Extreme: Black Diamond
- Foundry: Big Iron
- Lucent: Cajun Switch 550
- Nortel: Passport 8600

Specifications

Feature	6503-E	6506-E	6509-E	6513
Modular Slots	3	6	9	13
Maximum Port Density	192 10/100	480 10/100	768 10/100	1152 10/100
	104 10/100/1000	248 10/100/1000	392 10/100/1000	584 10/100/1000
	96 100FX	240 100FX 242	384 100FX	576 100FX
	98 SFP Gigabit	242 SFP Gigabit	386 SFP Gigabit	410 SFP Gigabit
	34 GBIC Gigabit	82 GBIC Gigabit	130 GBIC Gigabit	194 GBIC Gigabit
	8 10GE	20 10 GE	32 10GE	20 10GE
WAN Interfaces	DS0 to OC-48	DS0 to OC-48	DS0 to OC-48	DS0 to OC-48
Available Bandwidth	Scalable to 240 Gbps	Scalable to 480 Gbps	Scalable to 720 Gbps	Scalable to 720 Gbps
Throughput	Scalable to 99 Mpps	Scalable to 243 Mpps	Scalable to 387 Mpps	Scalable to 425 Mpps
Redundant Supervisor	Yes	Yes	Yes	Yes
Hot-Swappable Power Supplies	Yes	Yes	Yes	Yes
VLAN Maximum	4000	4000	4000	4000
FEC/GEC	Yes	Yes	Yes	Yes
Management Capabilities	CiscoWorks 2000, RMON, Enhanced Switched Port Analyzer (ESPAN), SNMP, Telnet, BOOTP, and Trivial File Transfer Protocol (TFTP)	Same as Catalyst 6503	Same as Catalyst 6503	Same as Catalyst 6503
Dimensions H x W x D (in.)	4 RU, 7 x 17.5 x 21.7	12 RU, 19.2 x 17.5 x 18.2	15 RU, 24.5 x 17.5 x 18.2	20 RU, 33.3 x 17.3 x 18.1

Selected Part Numbers and Ordering Information[1]

Catalyst 6500 - Bundles

WS-C6503-E-PFC2	Cat6503 SMARTnet Bundle chassis,Sup2-PFC2,Fan Tray,No wrSup
WS-C6503-E-FWM-K9	Cisco Catalyst 6503 Firewall Security System
WS-C6503-E-IPSEC-K9	Cisco Catalyst 6503 IPsec VPN System
WS-C6506-E-PFC2	Cat6506 SMARTnet Bundle chassis,Sup2-PFC2,Fan Tray,No wrSup
WS-C6506-E-FWM-K9	Cisco Catalyst 6506 Firewall Security System
WS-C6506-E-IPSEC-K9	Cisco Catalyst 6506 IPSec VPN System
WS-C6509-E-PFC2	Cat6509 SMARTnet Bundle chassis,Sup2-PFC2,Fan Tray,No wrSup
WS-C6509-E-FW-IDS-K9	Catalyst Firewall and Intrusion Prevention System
WS-C6509-E-FW-VPN-K9	Catalyst Firewall and VPN Security System

Catalyst 6500 - Chassis

WS-C6503-E	Enhanced Cat 6503 Chassis, 3slot, 4RU, No Pow Supply, No Fan Tray
WS-C6506-E	Enhanced Cat 6506 Chassis, 6slot, 12RU, No Pow Supply, No Fan Tray
WS-C6509-E	Enhanced Cat 6509 Chassis, 9slot, 15RU, No Pow Supply, No Fan Tray
WS-C6509-NEB-A	Cat 6509 NEBS Chassis for all Supervisors,No PS,No Fan
WS-C6513	Cat 6513 Chassis, 13slot, 19RU, No Pow Supply, No Fan Tray

Catalyst 6500 - Supervisor Engines & Switch Fabric Modules

WS-SUP720-3BXL=	Catalyst 6500/Cisco 7600 Supervisor 720 Fabric MSFC3 FC3BXL
WS-SUP720-3B=	Catalyst 6500/Cisco 7600 Supervisor 720 Fabric MSFC3 PFC3B
WS-SUP720=	Catalyst 6500/Cisco 7600 Supervisor 720 Fabric MSFC3 PFC3A
WS-X6K-S2U-MSFC2=	Catalyst 6500 Supervisor 2U, 256MB Supervisor, 512MB PFC2
WS-X6K-S2-MSFC2=	Catalyst 6500 Supervisor Engine-2, 2GE, plus MSFC-2 / PFC-2
WS-X6K-S2-PFC2=	Catalyst 6500 Supervisor Engine-2, 2GE, plus PFC-2
WS-SUP32-GE-3B=	C6500 Supervisor 32 with 8 GigE uplinks and PFC3B
WS-SUP32-10GE-3B=	Cat 6500 Supervisor 32 with 2 ports 10GbE and PFC3B

Catalyst 6500 10GE

WS-X6704-10GE=	Cat6500 4-port 10 Gigabit Ethernet Module (req. XENPAKs)

Catalyst 6500 - Gigabit Ethernet

WS-X6516A-GBIC=	Catalyst 6500 16-port GigE Mod, fabric-enabled (Req. GBICs)
WS-X6724-SFP=	Catalyst 6500 24-port GigE Mod: fabric-enabled (Req. SFPs)
WS-X6748-SFP=	Catalyst 6500 48-port CEF720 GigE Module (Req. SFPs)
WS-X6816-GBIC=	Cat6500 16-port GigE mod, 2 fab I/F, (Req GBICs, DFC/DFC3)

Catalyst 6500 - 10/100/100 Ethernet

WS-X6148-GE-TX=	Catalyst 6500 48-port 10/100/1000 GE Mod., RJ-45
WS-X6148A-GE-TX=	Catalyst 6500 48-port 10/100/1000 GE Mod., RJ-45
WS-X6148-GE-45AF=	Cat6500 PoE 802.3af 10/100/1000, 48 port (RJ45) line card
WS-X6148A-GE-45AF=	Cat6500 PoE 802.3af 10/100/1000, 48 port (RJ45) line card
WS-X6548-GE-TX=	Catalyst 6500 48-port fabric-enabled 10/100/1000 Module
WS-X6548-GE-45AF=	Cat 6500 PoE 802.3af 10/100/1000 48-port(RJ45)CEF256 card
WS-X6748-GE-TX=	Cat6500 48-port 10/100/1000 GE Mod: fabric enabled, RJ-45

Catalyst 6500 - 10/100 Ethernet

WS-X6148-RJ-21=	Catalyst 6500 48-Port 10/100 Upgradable to Voice, RJ-21
WS-X6148-21AF=	Cat6500 PoE 802.3af 10/100, 48 port (RJ21) line card
WS-X6148-RJ-45=	Catalyst 6500 48-Port 10/100, Upgradable to Voice, RJ-45
WS-X6148A-RJ-45=	Catalyst 6500 48-Port 10/100 w/TDR, Upgradable - PoE 802.3af
WS-X6148-45AF=	Catalyst 6500 PoE 802.3af 10/100, 48 port(RJ45) line card
WS-X6148A-45AF=	Catalyst 6500 PoE 802.3af 10/100, 48 port(RJ45) line card
WS-X6148X2-RJ-45=	Cat6500 96-Port 10/100 (RJ45), Upgradable to PoE 802.3af
WS-X6148X2-45AF=	Cat6500 PoE 802.3af 10/100, 96-Port (RJ-45) line card
WS-X6548-RJ-21=	Catalyst 6500 48-port 10/100, RJ-21, fabric-enabled
WS-X6548-RJ-45=	Catalyst 6500 48-port 10/100, RJ-45, fabric-enabled

Catalyst 6500 100 FX

WS-X6148FE-SFP=	Catalyst 6500 48 port 100Base-X module (require SFP)

Catalyst 6500 - Catalyst 6500 - Services Modules

WS-SVC-CMM=	COMMUNICATION MEDIA MODULE
WS-SVC-CMM-24FXS=	24-Port FXS Interface Port Adapter
WS-SVC-CMM-6E1=	6-PORT E1 INTERFACE PORT ADAPTER
WS-SVC-CMM-6T1=	6-PORT T1 INTERFACE PORT ADAPTER
WS-SVC-CMM-ACT=	Adhoc Conferencing and Transcoding PA
WS-SVC-CSG-1=	Content Services Gateway
WS-SVC-FWM-1-K9=	Firewall blade for Catalyst 6500
WS-SVC-IDS2BUNK9=	IDSM-2 600M mod spare
WS-SVC-IPSEC-1=	IPSec VPN Security Module for 6500 and 7600 series
WS-SVC-MWAM-1=	Multi-Processor WAN Application Module
WS-SVC-NAM-1=	Catalyst 6500 Network Analysis Module-1
WS-SVC-NAM-2=	Catalyst 6500 Network Analysis Module
WS-SVC-PSD-1=	Persistent Storage Device
WS-SVC-SSL-1-K9=	SSL Module for Catalyst 6500
WS-SVC-WLAN-1-K9=	Wireless LAN Services Module, CEF256
WS-X6066-SLB-APC=	Catalyst 6500/7600 Content Switching Module
WS-X6066-SLB-S-K9=	Content Switching Module with SSL daughter card

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See the Catalyst 6500 Family Web site: **http://www.cisco.com/go/6000**

Cisco Catalyst 8500 Multiservice Switch Routers

The Catalyst 8500 family multiservice switch routers integrate multiservice ATM switching with wire-speed multiprotocol routing for Gigabit Ethernet and Fast Ethernet into a single platform that also supports advanced Cisco IOS services for QoS and security. This family delivers enterprise MAN/WAN and Service Provider multiservice edge solutions with scalable performance, lower cost of ownership, and offer multiple interface options in a modular chassis. The Catalyst 8500 series consists of the modular Catalyst 8510 (10-Gbps, 5-slot) switch and the modular Catalyst 8540 (40-Gbps, 13-slot) switch. Both switches implement Cisco IOS Software to provide a variety of network services including reliability, security, management, and QoS with CiscoAssure policy networking.

When to Sell

Sell This Product	When a Customer Needs These Features
Catalyst 8540 and Catalyst 8510	• Integrated 10/100 FE, GE, and ATM • Flexible ATM interfaces (T1/E1, IMA, DS3/E3, OC-3, OC-12, and OC-48) • Frame relay and circuit emulation services • Wire-speed performance • Multiservice MAN/WAN applications • Multiservice Edge solutions • Voice, data, and video solutions • MPLS VPN

Key Features

- Ideal for integrated multiservice ATM switching with wire-speed multiprotocol routing for gigabit Ethernet (L3eATM or Layer 3 enabled ATM)
- Ideal for aggregating multiprotocol traffic from multiple wiring closets or from workgroup switches such as the Catalyst 5000 or distribution/server aggregation switches such as the Catalyst 6000 Family
- Provides nonblocking routing for IP, IPX, and IP multicast while also offering wire-speed Layer 2 switching for nonroutable protocols such as NetBIOS and DECnet local-area transport (LAT)
- Aggregate throughput of up to 24 million packets per second (pps) for non-blocking, wirespeed Layer 3 switching

Competitive Products

- Foundry: Big Iron
- Lucent: PSAX 1250 and 2300
- Marconi: ASX 1000, 1200, and 4000
- Alcatel: Omniswitch

Specifications

Feature	Catalyst 8510	Catalyst 8540
Modular Slots	5	13
Available Modules	See Part Numbers and Ordering information for a partial parts list	
Backplane	10 Gbps	40 Gbps
Throughput Performance	6 Mpps	24 Mpps
MAN / WAN	Gig Ethernet / ATM	Gig Ethernet / ATM
Dimensions (HxWxD)	10.5 x 17.2 x 18.14 in.	25.25 x 17.3 x 18.25 in.

Selected Part Numbers and Ordering Information[1]

Catalyst 8540—Common Equipment

C8540MSR-SKIT-AC	C8540 MSR Starter Kit w/ Stratum 4 Clock Module—AC Power (also available in DC Power)
C8545MSR-MRP4CLK=	C8540 MSR Multiservice Route Processor (spare)
C8545MSR-MRP3CLK=	C8540 MSR Route Processor Stratum 3 (spare)
C8546MSR-MSP-FCL=	C8540 MSR Switch Processor with ATM FC (spare)
C8540-CHAS13=	Catalyst 8540 - Chassis (spare)
C8540-PWR-AC=	C8540 Power Supply—AC (also available in DC Power)

Catalyst 8510—Common Equipment

C8510MSR-SKIT-AC	Catalyst 8510 MSR Starter Kit with AC Power (also available as -DC for DC Power)
C8515-MSRP=	C8510 Multiservice Switch Route Processor (spare)
C8510-SRP=	C8510 Layer 3 Switch Route Processor (spare)
C8510-CHAS5=	Catalyst 8510 - Chassis (spare)
C8510-PWR-AC=	C8510 power supply, AC (spare) (also available in DC power)

Catalyst 8500 Family—ATM Router Module Equipment

C8540-ARM-64K=	C8540 ATM Router Module 64K (also available for 8510)
C8540-ARM2=	C8540 Enhanced ATM Router Module (spare)

Catalyst 8500—Layer 3 Modules and ATM Interface Modules and Uplinks

C85EGE-2X-16K=	C8540 2-port Enhanced GE 16K (also available in 64K and 256K)
C85GE-8X-64K=	C8540 8-port GE 64K
C85FE-16TACL-64K=	C8540 16-port 10/100 RJ-45 w/ACL 64K
C8540-ACL=	C8540 ACL Daughter Card (also available for C8510/LS1010)
C85GE-1X-16K=	C8510/LS1010 1-port Gigabit Ethernet 16K (also available in 64K)
C85FE-8T-64K=	C8510/LS1010 8-port 10/100 RJ-45 64K
C85MS-4F-OC12SS=	C8540 4-port OC-12c/STM-4 SMF
C85MS-4F-OC12MM=	C8540 4-port OC-12c/STM-4 MMF
C85MS-16F-OC3MM=	C8540 16-port OC-3c/STM-1 MMF (spare)
C85MS-16F-OC3SM=	C8540 16-port OC-3c/STM-1 SMF-LR (spare)

Catalyst 8500—Port Adapter Modules

C85MS-SCAM-2P=	C8540 SuperCAM for Port Adapter Modules (spare)
C8510TSCAM-2P=	CS8510/LS1010 Traffic Shaping Carrier Access Modules (spare)
WATM-CAM-2P=	C8510 / LS1010 Carrier Modules (spare)
WAI-T1C-4RJ48=	4 Port T1 (circuit emulation) RJ-48 PAM (also available in EI and in E1 BNC)
C85MS-4E1-FRRJ48=	C8500 4-port E1 Frame-Relay/FUNI PAM (spare)
WAI-OC3-4MM=	4 Port OC-3c/STM-1 MMF PAM (also available in SMF-IR & SMF-LR)
WAI-OC3-1S3M=	OC-3c/STM-1 Mix PAM, 1-port SMF-IR + 3-port MMF (spare)
WAI-OC12-1MM=	1 Port OC-12c/STM-4c MMF PAM (also available in SMF-IR and SMF-LR)
WAI-T3-4BNC=	4 Port DS-3 PAM (spare and in E3 BNC)
C85MS-8T1-IMA=	C8500MSR/LS1010 8-port TI IMA PAM (also available in E1 120 ohm)
WAI-T1-4RJ48=	4 Port T1 (ATM) RJ-48 PAM (spare also available in E1 and E1 BNC E1)

Catalyst 8500 Software Feature License Options

FR-8510-TAGSW=	C8510 Tag Switching upgrade license (also available with HPNNI and HPNNI + Tag Switching)
FR-8540MSR-HPNNI=	Cat 8540MSR—Hierarchical PNNI License (also available with Tag Switching)

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See the Catalyst 8500 series Web site: **http://www.cisco.com/go/8500**

Wireless LAN

Wireless LAN at a Glance (IEEE 802.11 a/b/g)

Product	Features	Page
Cisco Aironet 1130AG Series Access Point	• IEEE 802.11a and 802.11g radios with simultaneous dual band support provides 108 Mbps capacity • Works in conjunction with dual band clients optimizing usage of network bandwidth while providing backwards compatibility with 802.11b clients	3-2
Cisco Aironet 1100 Series Access Point	• Single 802.11g radio supports maximum data rate of 54 Mbps • 2.4 GHz integrated diversity dipole antennas • Easy-to-install, cost-efficient deployment for offices and similar RF environments	3-3
Cisco Aironet 1230AG Series Access Point	• Antenna connectors for both 2.4GHz and 5GHz radios ensure optimal coverage, range, and reliability in particularly warehouses, offices, and other high multipath environments. • Cast aluminum case and rugged features support deployment in industrial environments. • Broad operating temperature range and UL 2043 certification for plenum rating requirements set by local fire codes supports installation in environmental air spaces	3-5
Cisco Aironet 1200 Series Access Points	• Modular design allows single or dual radio configuration for up to 54 Mbps connectivity in both the 2.4 and 5 GHz bands • May be field upgraded to support 802.11a with a hardware upgrade module	3-6
Cisco Aironet 1300 Series Outdoor Access Point/Bridge	• Network connections within a campus area • Outdoor infrastructure for mobile networks, users and public accessibility • Temporary networks for portable or military operations	3-8
Cisco Aironet 802.11a/b/g Wireless Cardbus and PCI Adapter	• Secure network communications, with the Cisco Wireless Security Suite and support for Wi-Fi Protected Access (WPA) • Comprehensive utilities for flexible, easy configuration and management	3-10
Cisco Aironet 5 GHz 54 Mbps Wireless LAN Client Adapter	• IEEE 802.11a-compliant CardBus adapter that operates in the UNII-1 and UNII-2 bands • Complements the Cisco Aironet 1200 Series 802.11a Access Point, providing a solution that combines performance and mobility with the security and manageability that enterprises require	3-11
Cisco Aironet 350 Series Client Adapters	• Secure network communications • World mode for international roaming • PCMCIA card and PCI form factors • IEEE 802.11b	3-12
Cisco Aironet 1400 Series Wireless Bridge	• Support for both point-to-point or point-to-multipoint configurations • Range and throughput supporting data rates up to 54 Mbps • Enhanced security mechanisms based on 802.11 standards • Ruggedized enclosure optimized for harsh outdoor environments with extended operating temperature range	3-14
Cisco Aironet 350 Series Workgroup Bridge	• Driverless installation of up to eight Ethernet-enabled devices • Optimum wireless performance and range • Standards-based centralized security • IEEE 802.11b	3-16
Cisco Aironet 350 Series Wireless Bridge	• High-speed, high-power radios, delivering building-to-building links of up to 25 miles (40.2 km) • Supports both point-to-point and point-to-multipoint configurations • Simplified installation, improved performance, and upgradeable firmware, ensuring investment protection • IEEE 802.11b	3-17
Cisco Aironet Antennas and Accessories	• A wide array of options • FCC-approved directional and omni-directional antennas • Low-loss cable, mounting hardware, and other accessories available	3-18
CiscoWorks Wireless LAN Solution Engine	A hardware-based wireless LAN management solution that provides template-based configuration with user-defined groups to effectively manage a large number of access points and bridges. • Monitors LEAP authentication servers • Enhances security management through mis-configuration detection on access points and bridges	9-22

Cisco Aironet 1130AG Series Access Point

The Cisco Aironet 1130AG Series is the ideal enterprise access point for offices and similar environments. Helps assure that a network employs the strongest security available. Additional design features include diversity antennas with omni-directional coverage and an unobtrusive form factor.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco Aironet 1130AG Series Access Point	• When you need a high-capacity and high-security WLAN in the enterprise office • When you need two high-performance radios providing simultaneous support for the 802.11a and 802.11g standards offering 108 Mbps capacity for your growing WLAN • When you need a low-profile access point that blends into the environment and is easy to deploy

Key Features

- IEEE 802.11a and 802.11g radios with simultaneous dual band support provides 108 Mbps capacity. Works with dual band clients to optimize usage of network bandwidth while providing backwards compatibility with 802.11b clients; Complies with 802.11i security standards and is WPA2 certified; Incorporates AES encryption in hardware;
- Provides robust signals to long distances and mitigates the effects of multipath signal propagation for more consistent coverage
- Cisco IOS Software provides intelligent network services for scalable, robust, enterprise connectivity; Cisco Structured Wireless-Aware framework integrates wired and wireless network
- Variable transmit power settings that allows access point coverage to be tuned for differing requirements
- Integrated 4.5 dBi antennas—Complete system deployable out of the box without external antennas; specifically designed to provide omni-directional coverage for offices and similar radio frequency environments. Low 0.5 mW setting supports closer spacing of access points in high density deployments
- Wi-Fi Certified

Specifications

Features	Cisco Aironet 1130AG Series Access Point
Data rates supported	802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps; 802.11b: 1, 2, 5.5, 11 Mbps; 802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps
Network standard	IEEE 802.11a, 802.11b and 802.11g
Uplink	Autosensing 802.3 10/100BaseT Ethernet
Frequency band	802.11a—5.15 to 5.35, 5.725-5.825 GHz (FCC UNII 1, 2 and 3), 5.725 to 5.850 GHz (China), 5.15 to 5.35 GHz (ETSI), 5.15 to 5.25 GHz (TELEC), 5.15 to 5.35, 5.725-5.825 GHz (North America); 802.11b—2.412 to 2.462 GHz (FCC), 2.412 to 2.472 GHz (China), 2.412 to 2.472 GHz (ETSI), 2.412 to 2.484 GHz (TELEC), 2.412 to 2.462 GHz (North America); 802.11g—2.412 to 2.462 GHz (FCC), 2.412 to 2.472 GHz (China), 2.412 to 2.472 GHz (ETSI), 2.412 to 2.484 GHz CCK: (TELEC), 2.412 to 2.472 GHz OFDM: (TELEC), 2.412 to 2.462 GHz (North America)
Wireless medium	802.11a and 802.11g—Orthogonal Frequency Division Multiplexing (OFDM); 802.11b and 802.11g—Direct sequence spread spectrum (DSSS)
Media access protocol	Carrier sense multiple access with collision avoidance (CSMA/CA)
Modulation	OFDM—BPSK @ 6 and 9 Mbps, QPSK @ 12 and 18 Mbps, 16-QAM @ 24 and 36 Mbps, 64-QAM @ 48 and 54 Mbps; DSSS—DBPSK @ 1 Mbps, DQPSK @ 2 Mbps, CCK @ 5.5 and 11 Mbps
Operating channels	802.11a—FCC: 12; China: 4; ETSI: 8; TELEC (Japan): 4; North America: 12; 802.11b—FCC: 11; China: 13; ETSI: 13; TELEC (Japan): 14; North America: 11; 802.11g—FCC: 11; China: 13; ETSI: 13; TELEC (Japan): CCK-14, OFDM-13; North America: 11
Non-overlapping channels	802.11a—Up to twelve; 802.11b/g ñ Three
Receive sensitivity	802.11a— 6 Mbps: -85 dBm, 9 Mbps: -84 dBm, 12 Mbps: -82 dBm, 18 Mbps: -80 dBm, 24 Mbps: -77 dBm, 36 Mbps: -73 dBm, 48 Mbps: -69 dBm, 54 Mbps: -68 dBm; 802.11b—1 Mbps: -94 dBm, 2 Mbps: -92 dBm, 5.5 Mbps: -90 dBm, 11 Mbps: -87 dBm; 802.11g—1 Mbps: -94 dBm, 2 Mbps: -92 dBm, 5.5 Mbps: -90 dBm, 6 Mbps: -85 dBm, 9 Mbps: -84 dBm, 11 Mbps: -87 dBm, 12 Mbps: -82 dBm, 18 Mbps: -80 dBm, 24 Mbps: -77 dBm, 36 Mbps: -73 dBm, 48 Mbps: -69 dBm, 54 Mbps: -68 dBm
Available transmit power settings	OFDM: 50 mW (17 dBm), 32 mW (15 dBm), 25 mW (14 dBm), 10 mW (11 dBm), 5 mW (8 dBm), 3 mW (5 dBm), 1 mW (2 dBm), 0.5 mW (-1 dBm); 802.11b: CCK—100 mW (20 dBm), 50 mW (17 dBm), 25 mW (14 dBm), 10 mW (11 dBm), 5 mW (8 dBm), 3 mW (5 dBm), 1 mW (2 dBm), 0.5 mW (-1 dBm); 802.11g: CCK—100 mW (20 dBm), 50 mW (17 dBm), 25 mW (14 dBm), 10 mW (11 dBm), 5 mW (8 dBm), 3 mW (5 dBm), 1 mW (2 dBm), 0.5 mW (-1 dBm); OFDM—50 mW (17 dBm), 25 mW (14 dBm), 10 mW (11 dBm), 5 mW (8 dBm), 3 mW (5 dBm), 1 mW (2 dBm), 0.5 mW (-1 dBm) Maximum power setting will vary by channel and according to individual country regulations.

Features	Cisco Aironet 1130AG Series Access Point
Range	Indoor (Distance across open office environment): 802.11a (50 mW)—90 ft (27 m) @ 54 Mbps, 95 ft (29 m) @ 48 Mbps, 100 ft (30 m) @ 36 Mbps, 140 ft (42 m) @ 24 Mbps, 180 ft (54 m) @ 18 Mbps, 210 ft (64 m) @ 12 Mbps, 250 ft (76 m) @ 9 Mbps, 300 ft (91 m) @ 6 Mbps; 802.11b (100 mW)—160 ft (48 m) @ 11 Mbps, 220 ft (67 m) @ 5.5 Mbps, 270 ft (82m) @ 2 Mbps, 410 ft (124 m) @ 1 Mbps; 802.11g (50 mW)—90 ft (27 m) @ 54 Mbps, 95 ft (29 m) @ 48 Mbps, 100 ft (30 m) @ 36 Mbps, 140 ft (42 m) @ 24 Mbps, 180 ft (54 m) @ 18 Mbps, 210 ft (64 m) @ 12 Mbps, 250 ft (76 m) @ 9 Mbps, 300 ft (91 m) @ 6 Mbps Outdoor: 802.11a (50 mW)—250 ft (76m) @ 54 Mbps, 600 ft (183 m) @ 18 Mbps, 1300 ft (396 m) @ 6 Mbps; 802.11b (100 mW)—1000 ft (304 m) @ 11 Mbps, 2000 ft (610 m) @ 1 Mbps; 802.11g (50 mW)—250 ft (76m) @ 54 Mbps, 600 ft (183 m) @ 18 Mbps, 1300 ft (396 m) @ 6 Mbps Ranges and actual throughput vary based upon numerous environmental factors so individual performance may differ.
Compliance	Safety—UL 1950, CSA 22.2 No. 950-95, IEC 60950, EN 60950 ; Radio Approvals—FCC Part 15.247, 15.407, RSS-210 (Canada), EN 300.328, EN 301.893 (Europe), ARIB-STD 33 (Japan), ARIB-STD 66 (Japan), ARIB-STD T71 (Japan), AS/NZS 3548, 4268.2 (Australia and New Zealand); EMI and Susceptibility (Class B), FCC Part 15.107 and 15.109, ICES-003 (Canada), VCCI (Japan), EN 301.489-1 and -17 (Europe), Security, 802.1X and TKIP, WPA 2, AES; Other: IEEE 802.11b and IEEE 802.11g, FCC Bulletin OET-65C, RSS-102
SNMP compliance	MIB I and MIB II
Antennas	Integrated 4.5 dBi diversity inverted F antennas GAIN PATTERN
Security architecture client authentication and encryption (Cisco Wireless Security Suite supporting WPA and WPA2)	Authentication: 802.1X support including LEAP, EAP-FAST, PEAP-GTC, PEAP-MSCHAPV2, EAP-TLS, EAP-TTLS and EAP-SIM to yield mutual authentication and dynamic, per-user, per-session encryption keys (WPA and WPA2); MAC address and by standard 802.11 authentication mechanisms Encryption: AES-CCMP encryption (WPA2); TKIP encryption enhancements: key hashing (per-packet keying), message integrity check (MIC) and broadcast key rotation via Cisco TKIP or WPA TKIP; Support for static and dynamic IEEE 802.11 WEP keys of 40 bits and 128 bits
Status LEDs	External: Status LED indicates operating state, association status, error/warning condition, boot sequence and maintenance status Internal: Ethernet LED indicates activity over the Ethernet, status; Radio LED indicates activity over the radios, status
Management and Topology	CiscoWorks CiscoView, Resource Manager Essentials, and Campus Manager
Remote Configuration	BOOTP, DHCP, Telnet, HTTP, FTP, TFTP, and SNMP
Dimensions	7.5 in. (19.1 cm) wide; 7.5 in. (19.1 cm) high; 1.3 in. (3.3 cm) deep
Weight	1.5 lbs. (0.67 kg)
Environmental	32-104× F (0-40× C); 10-90% humidity (non-condensing)
System Memory	32 MB RAM; 16 MB FLASH
Input Power Requirements	100-240 VAC 50-60Hz (power supply) ; 36-57 VDC (device)
Power Draw	12.2 watts, max
Warranty	One year

Selected Part Numbers and Ordering Information

Cisco Aironet 1130AG Series Access Point

AIR-AP1131AG-A-K9	Cisco Aironet 1130AG Series IEEE 802.11a/b/g Access Point, FCC Configuration
AIR-AP1131AG-C-K9	Cisco Aironet 1130AG Series IEEE 802.11a/b/g Access Point, China Configuration
AIR-AP1131AG-E-K9	Cisco Aironet 1130AG Series IEEE 802.11a/b/g Access Point, ETSI Configuration
AIR-AP1131AG-J-K9	Cisco Aironet 1130AG Series IEEE 802.11a/b/g Access Point, Japan Configuration
AIR-AP1131AG-N-K9	Cisco Aironet 1130AG Series IEEE 802.11a/b/g Access Point, North America Configuration (Excluding-FCC)

For More Information

See the Cisco Aironet Web site: **http://www.cisco.com/go/aironet**

Cisco Aironet 1100 Series Access Points

The Cisco Aironet® 1100 Series offers customers an affordable, easy-to-install, single-band access point that features enterprise-class management, security, and scalability. Legacy Cisco Aironet 1100 Series access points have an 802.11b radio that may be field-upgraded to 802.11g; alternately, the Cisco Aironet 1100 Series may be ordered with a single 802.11g radio that is backward-compatible with 802.11b.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco Aironet 1100 Series Access Point	• When you need an affordable, easy-to-install single-band 802.11g AP • When a high-performance 2.4 GHz WLAN solution that delivers data rates of up to 11 Mbps (IEEE 802.11b) or 54 Mbps (IEEE 802.11g) with backwards compatibility to legacy 802.11b equipment is needed • When you need a high-quality transmitter and receiver design that provides long range and reliable coverage

Key Features

- Single 802.11b or 802.11g radios available; 802.11b is field upgradable to 802.11g
- Provides end-to-end solution support for Intelligent Network Services
- Variety of mounting options
- With the IEEE 802.11g version, up to 54 Mbps data rates while maintaining full backward compatibility with legacy 802.11b devices
- Provides administrators configuration control to support both 802.11g and legacy 802.11b clients
- Cisco IOS Software operating system provides a familiar user interface
- Integrated diversity dipole antennas
- WiFi-Certified

Specifications

Feature	Cisco Aironet 1100 Series Access Points
Data Rates Supported	1, 2, 5.5, 11 Mbps
Network standard	IEEE 802.11b
Uplink	Autosensing 802.3 10/100BaseT Ethernet
Frequency Band	2.412 to 2.462 GHz (FCC); 2.412 to 2.472 GHz (ETSI); 2.422 to 2.452 GHz (Israel); 2.412 to 2.484 GHz (TELEC)
Network architecture type	Infrastructure, star topology
Wireless Medium	Direct Sequence Spread Spectrum (DSSS)
Modulation	DBPSK @ 1 Mbps; DQPSK @ 2 Mbps; CCK @ 5.5 and 11 Mbps
Operating Channels	802.11b—ETSI: 13; Israel: 4; Americas: 11; TELEC (Japan): 14; 802.11g—ETSI: 13; Americas: 11; TELEC (Japan): CCK-14, OFDM-13
Nonoverlapping Channels	Three
Receive sensitivity	1 Mbps: -94 dBm; 2 Mbps: -91 dBm; 5.5 Mbps: -89 dBm; 11 Mbps: -85 dBm
Available Transmit Power Settings[1]	100 mW (20 dBm); 50 mW (17 dBm); 30 mW (15 dBm); 20 mW (13 dBm); 5 mW (7 dBm);1 mW (0 dBm) Maximum power setting will vary according to individual country regulations
Range (typical @ maximum power setting, 2.2 dBi gain diversity dipole antenna)	Indoor (Distance across open office environment): 90 ft (27 m) @ 54 Mbps, 95 ft (29 m) @ 48 Mbps, 100 ft (30 m) @ 36 Mbps, 140 ft (42 m) @ 24 Mbps, 180 ft (54 m) @ 18 Mbps, 210 ft (64 m) @ 12 Mbps, 220 ft (67 m) @ 11 Mbps, 250 ft (76 m) @ 9 Mbps, 300 ft (91 m) @ 6 Mbps, 310 ft (94 m) @ 5.5 Mbps, 350 ft (107 m) @ 2 Mbps, 410 ft (125 m) @ 1 Mbps; Outdoor: 110 ft (34 m) @ 54 Mbps, 200 ft (60 m) @ 48 Mbps, 225 ft (69 m) @ 36 Mbps, 325 ft (100 m) @ 24 Mbps, 400 ft (122 m) @ 18 Mbps, 475 ft (145 m) @ 12 Mbps, 490 ft (150 m) @ 11 Mbps, 550 ft (168 m) @ 9 Mbps, 650 ft (198 m) @ 6 Mbps, 660 ft (201 m) @ 5.5 Mbps, 690 ft (210 m) @ 2 Mbps, 700 ft (213 m) @ 1Mbps
SMTP Compliance	MIB I and MIB II
Antenna	Integrated 2.2 dBi diversity dipole antennas
Security architecture client authentication (Cisco Wireless Security Suite)	Authentication: 802.1X support, including Cisco LEAP, EAP-FAST, PEAP-GTC, PEAP-MSCHAPv2, EAP-TLS, EAP-TTLS, and EAP-SIM to yield mutual authentication and dynamic, per-user, per-session encryption keys (WPA and WPA2); MAC address and standard 802.11 authentication mechanisms
	Encryption: AES-CCMP encryption (WPA2); TKIP encryption enhancements: key hashing (per-packet keying), message integrity check (MIC) and broadcast key rotation via Cisco TKIP or WPA TKIP; Support for static and dynamic IEEE 802.11 WEP keys of 40 bits and 128 bits
Software Image Network and Inventory support	CiscoWorks CiscoView, Resource Manager Essentials, and Campus Manager
Remote configuration support	BOOTP, DHCP, Telnet, HTTP, FTP, TFTP, and SNMP
Dimensions	4.1 in. (10.4 cm) wide; 8.1 in. (20.5 cm) high; 1.5 in. (3.8 cm) deep
Weight	10.5 oz. (297 g)
Environmental	32° to 104° F (0° to 40° C); 10-90% humidity (noncondensing)
System Memory	16 MB RAM; 8 MB Flash
Input Power Requirements	100 to 240 VAC 50 to 60Hz (power supply); 33 to 57 VDC (device)
Power Draw	4.9 watts, RMS
Warranty	One year

1. Management Information Base

Selected Part Numbers and Ordering Information

Cisco Aironet 1100 Series Access Point

AIR-AP1120B-A-K9	802.11b AP, Single MPCI Radio, Int Ant, FCC Cnfg
AIR-AP1120B-E-K9	802.11b AP, Single MPCI Radio, Int Ant, ETSI Cnfg
AIR-AP1120B-J-K9	802.11b AP, Single MPCI Radio, Int Ant, Japan Cnfg
AIR-AP1121G-A-K9	802.11g AP, Single MPCI Radio, Int Ant, FCC Cnfg
AIR-AP1121G-E-K9	802.11g AP, Single MPCI Radio, Int Ant, ETSI Cnfg

For More Information

See the Cisco Aironet Web site: **http://www.cisco.com/go/aironet**

Cisco Aironet 1230AG Series Access Point

The 1230AG Series modular access point features both antenna connectors for greater range or coverage versatility using a broad selection of available Cisco antennas, as well as a rugged, metal housing for operation over extended temperature ranges typical of challenging environments.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco Aironet 1230AG Series Access Point	• When versatility, high-capacity, security, and Enterprise class features is required by industrial WLAN customers
	• When a versatile antenna and flexible installation options is required for a rugged wireless LAN environment
	• When simultaneous support of 802.11a and 802.11g standards with 108 Mbps of data rate in the 2.4 and 5Ghz bands is required

Key Features

- Dual 802.11a and 802.11g radios deliver a combined capacity of 108 Mbps
- 2.4 GHz and 5 GHz antenna connectors for greater range or coverage versatility and more flexible installation options using a broad selection of available Cisco antennas
- Supports Cisco IOS Software and is a component of the Cisco Structured Wireless-Aware Network (SWAN) framework, a comprehensive framework that delivers an integrated, end-to-end wired and wireless network
- Hardware-assisted AES encryption provides support for interoperable IEEE 802.11i and WPA2 security
- WiFi-Certified

Specifications

Features	Cisco Aironet 1230AG Series Access Point
Software	Cisco IOS software 12(3)2JA or later
Protocols and Air Interface	IEEE 802.11a/b/g
Uplink	802.3 Ethernet 10/100 Base-T
Radio Module Form Factor	802.11a: CardBus (32-bit); 802.11b or 802.11g: Mini-PCI (32-bit)
Frequency Band	802.11a—5.15 to 5.35 GHz and 5.725-5.825 GHz (FCC), 5.725 to 5.825 GHz (China), 5.15 to 5.35 GHz (ETSI), 5.15 to 5.35 GHz (TELEC), 5.15 to 5.35 GHz and 5.725-5.825 GHz (North America), 5.15 to 5.25 GHz and 5.725 to 5.825 GHz (Singapore), 5.25 to 5.35 GHz 5.725 to 5.825 GHz (Taiwan); 802.11b—2.412 to 2.462 GHz (FCC), 2.412 to 2.472 GHz (ETSI), 2.412 to 2.484 GHz (TELEC), 2.432 to 2.447 GHz (Israel) ; 802.11g—2.412 to 2.462 GHz (FCC), 2.412 to 2.472 GHz (ETSI), 2.412 to 2.484 GHz CCK: (TELEC), 2.412 to 2.472 GHz OFDM: (TELEC), 2.432 to 2.447 GHz (Israel)
Media Access Protocol	Carrier sense multiple access with collision avoidance (CSMA/CA)
Wireless Modulation	802.11a—Orthogonal Frequency Division Multiplexing (OFDM); 802.11b or 802.11g—Direct sequence spread spectrum (DSSS); Orthogonal Frequency Division Multiplexing (OFDM)
Datarates Supported	802.11a—6, 9, 12, 18, 24, 36, 48, 54 Mbps; 802.11b: 1, 2, 5.5, 11 Mbps; 802.11g—1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps
Memory and Processor	IBM PowerPC405 (200 MHz); 16 Mbytes RAM; 8 Mbytes FLASH
Receive Sensitivity	802.11g radio with 100mW maximum transmit power and 72dbm receive sensitivity at 54Mbps; 802.11a radio with 17db maximum transmit power and 72dbm receive sensitivity at 54Mbps
Transmit Power	802.11a: 50 mW (17 dBm), 25 mW (14 dBm), 10 mW (10 dBm), 5 mW (7 dBm)
	802.11g: (CCK): 100 mW (20 dBm), 50 mW (17 dBm), 30 mW (15 dBm), 20 mW (13 dBm), 10 mW (10 dBm), 5 mW (7 dBm), 1 mW (0 dBm)
	802.11g: (OFDM): 30 mW (15 dBm), 20 mW (13 dBm), 10 mW (10 dBm), 5 mW (7 dBm), 1 mW (0 dBm)
	Maximum power setting will vary according to individual country regulations.

Range	802.11g: Indoor—54Mbps/xx ft, 6Mbps/xx ft; Outdoor: 54 Mbps/xx ft, 6Mbps/xx ft
	802.11a: Indoor—54Mbps/xx ft, 6Mbps/xx ft; Outdoor: 54 Mbps/xx ft, 6Mbps/xx ft
Antenna	2.4 and 5 GHz: Two RP-TNC connectors
Operating Channels	5 GHz Bandó FCC: 12, China: 4, ETSI: 8, Japan (TELEC): 4, North America: 12, Singapore: 8, Taiwan: 8
	2.4 GHz Bandó 802.11b: ETSI: 13; Israel: 4; Americas: 11; TELEC (Japan): 14; 802.11g: ETSI: 13; Israel: 4; Americas: 11; Japan (TELEC): 14 CCK, 13 OFDM
Non Overlapping Channels	15 non overlapping (FCC and North America)
SNMP	V1 and v2
Network Management	SSH, HTTPS, TFTP. FTP, Telnet, Console port, CiscoWorksÓetc
LEDs	Three indicators on the top panel report association status, operation, error/warning, firmware upgrade, and configuration, network/modem, and radio status.
Housing	Die cast aluminum
Physical Dimensions	6.562 in. (16.67 cm) wide; 7.232 in. (18.37 cm) deep; 1.660 in. (4.22 cm) high; add 0.517 in. (1.31 cm) to the height for mounting bracket; 27.6 oz (783g) add 6.4 oz (181g) for mounting bracket
Environmental	-4- 122×F (-20-50×C), 10-90% humidity (noncondensing)
Input Power Requirements	90 to 240 VAC ±10% (power supply); 48 VDC ±10%
Power Draw	11 watts, RMS
Approvals and Compliance	Radio Approvals: FCC Part 15.401-15.407, RSS-210 (Canada), EN 301.893 (Europe), ARIB STD-T71 (Japan), AS 4268.2 (Australia), FCC Part 15.247, RSS-210 (Canada), EN 300.328 (Europe), ARIB-STD 33 (Japan), ARIB-STD 66 (Japan), AS/NZS 3548 (Australia and New Zealand)
	Security: 802.1X and TKIP, WPA and WPA2, AES
	Other: IEEE 802.11a, IEEE 802.11g, FCC Bulletin OET-65C, RSS-102
EMI	EMI and Susceptibility (Class B): FCC Part 15.107 and 15.109; ICES-003 (Canada); VCCI (Japan) ; EN 301.489-1 and -17 (Europe)
Warranty	One year

Selected Part Numbers and Ordering Information

Part Number	Product Name
AIR-AP1232AG-x-K9	1230AG Series IEEE 802.11a/b/g Access Point

For More Information

See the Cisco Aironet Web site **http://www.cisco.com/go/aironet**

Cisco Aironet 1200 Series Access Points

The Cisco Aironet 1200 Series offers the same versatility, high capacity, security, and enterprise-class features demanded by industrial wireless LAN customers, but when configured as a single-band IEEE 802.11g access point, provides a cost-effective, single-band solution. It protects current and future network infrastructure investments. Customers can confidently deploy 802.11g networks now, and have the option to upgrade to a dual-band 802.11a/g network in the future.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco Aironet 1200 Series Access Point	• Challenging environments that require the antenna versatility associated with connectorized antennas, as well as a rugged metal enclosure and a broad operating temperature range
	• Supports installation in environmental air spaces, such as areas above suspended ceilings
	• IT Professionals or business executives want mobility within the enterprise to increase productivity, as an addition or alternative to wired networks.
	• Business owners or IT directors need flexibility for frequent LAN wiring changes, either throughout the site or in selected areas.
	• Any company whose site is not conducive to LAN wiring because of building or budget limitations, such as older buildings, leased space or temporary sites.
	• Offers future revenue opportunities via 802.11a upgrades.

Key Features

- Single 802.11g radio supports maximum data rate of 54 Mbps
- Supports the Cisco SWAN Framework which extends the security, scalabililty, reliability, ease of deployment, and manageability available in wired networks to the wireless infrastructure.
- Configurable to meet current and future customer-specific requirements
- Enterprise-class security with the Cisco Wireless Security Suite, WPA and WPA2 providing authentication via IEEE 802.1X and encryption via WPA Temporal Key Integrity Protocol (TKIP), Cisco TKIP, or Advanced Encryption Standard (AES)
- Offers investment protection because of its upgrade capability and compatibility with current standards
- Supports inline power over Ethernet or local power
- Wi-Fi Certified

Specifications

Feature	Cisco Aironet 1200 Series Access Points
Data Rates Supported	802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps
Network Standard	IEEE 802.11b and IEEE 802.11g
Uplink	Autosensing 802.3 10/100BASE-T Ethernet
Radio Module Form	802.11a: CardBus (32-bit); 802.11b or 802.11g: Mini-PCI (32-bit)
Frequency Band and Operating Channels	Americas (FCC): 2.412 to 2.462 GHz; 11 channels; Japan (TELEC): 2.412 to 2.472 GHz, 13 channels Orthogonal Frequency Division Multiplexing (OFDM); ETSI: 2.412 to 2.484 GHz, 14 channels Complementary Code Keying (CCK) 2.412 to 2.472 GHz; 13 channels; Israel: 2.432 to 2.472 GHz; 9 channels
Nonoverlapping Channels	802.11g: 3
Wireless Modulation	802.11g: Direct sequence spread spectrum (DSSS); OFDM
Receive Sensitivity (Typical)	802.11g: 6 Mbps: -90 dBm, 9 Mbps: -84 dBm, 12 Mbps: -82 dBm, 18 Mbps: -80 dBm, 24 Mbps: -77 dBm, 36 Mbps: -73 dBm, 48 Mbps: -72 dBm, 54 Mbps: -72 dBm
Available Transmit Power	802.11g—CCK: 100 mW (20 dBm), 50 mW (17 dBm), 30 mW (15 dBm), 20 mW (13 dBm), 10 mW (10 dBm), 5 mW (7 dBm), 1 mW (0 dBm)
Range	802.11g—Outdoor: 110 ft (34m) @ 54 Mbps, 200 ft (61 m)@ 48 Mbps, 225 ft (69 m) @ 36 Mbps, 325 ft (99 m) @ 24 Mbps, 400 ft (122 m) @ 18 Mbps, 475 ft (145 m) @ 12 Mbps, 490 ft (149 m) @ 11 Mbps, 550 ft (168 m) @ 9 Mbps, 650 ft (198 m) @ 6 Mbps, 660 ft (201 m) @ 5.5 Mbps, 690 ft (210 m) @ 2 Mbps, 700 ft (213 m) @ 1 Mbps 802.11g—Indoor: 90 ft (27 m) @ 54 Mbps, 95 ft (29 m) @ 48 Mbps, 100 ft (30 m) @ 36 Mbps, 140 ft (43 m) @ 24 Mbps, 180 ft (55 m) @ 18 Mbps, 210 ft (64 m) @ 12 Mbps, 220 ft (67 m) @ 11, Mbps, 250 ft (76 m) @ 9 Mbps, 300 ft (91 m) @ 6 Mbps, 310 ft (94 m) @ 5.5 Mbps, 350 ft (107 m) @ 2 Mbps, 410 ft (125 m) @ 1 Mbps (Ranges and actual throughput vary based upon numerous environmental factors so individual performance may differ)
Compliance	Safety: UL 60950, CAN/CSA C22.2 No. 60950, IEC 60950, UL 2043; Radio Approvals: FCC Part 15.247, RSS-210 (Canada), EN 300.328, ARIB-STD 33 (Japan), ARIB-STD 66 (Japan), AS/NZS 4771 (Australia and New Zealand); EMI and Susceptibility (Class B): FCC Part 15.107 and 15.109, ICES-003 (Canada), VCCI (Japan), EN 301.489-1 and -17 (Europe), AS/NZS 3548; Security: 802.11i, WPA2, WPA, 802.1X, AES, TKIP; Other: IEEE 802.11g, FCC Bulletin OET-65C, RSS-102
Antenna	2.4 GHz Radio: Two RP-TNC connectors; 802.11g approved with AIR-ANT1728, AIR-ANT1729, AIR-ANT2012, AIR-ANT2506, AIR-ANT3213, AIR-ANT3549, AIR-ANT4941, AIR-ANT5959, and AIR-ANT2410Y-R
Network Management	BootP, Secure Shell (SSH) Protocol, Secure HTTP (HTTPS), Trivial File Transfer Protocol (TFTP), FTP, Telnet, console port, Simple Network Management Protocol (SNMP) MIB I and MIB II, CiscoWorks Resource Manager Essentials (RME), CiscoWorks Software Image Manager (SWIM), CiscoWorks Campus Manager, CiscoWorks CiscoView, and CiscoWorks WLSE
LEDs	Three indicators on the top panel report Ethernet activity and status, device operating status, and radio activity and status.
Housing	Die-cast aluminum
Dimensions (H x W x D)	1.660 x 6.562 x 7.232 in. (4.22 x 16.67 x 18.37 cm); add 0.517 in. (1.31 cm) height for mounting bracket
Weight	1.725 lb (0.783 kg); add 0.4 lb (0.181 kg) for mounting bracket
Environmental	-4 to 122×F (-20 to 50×C), 10 to 90 percent humidity (noncondensing)
Memory and Processor	IBM PowerPC405 (200 MHz); 16 MB RAM; 8 MB Flash memory
Input Power Requirements	90 to 240 VAC ±10 percent (power supply); 48 VDC ±10 percent
Power Draw	6W maximum
Warranty	One year

Selected Part Numbers and Ordering Information[1]

1200 Series Access Points

AIR-AP1200	AP Platform, Cardbus and MPCI Slots (no radio), Enet Uplink
AIR-AP1220B-A-K9	802.11b AP w/Avail CBus Slot, FCC Cnfg
AIR-AP1220B-E-K9	802.11b AP w/Avail CBus Slot, ETSI Cnfg
AIR-AP1220A-J-K9	802.11a AP w/Avail MPCI Slot, Enet Uplink, TELEC Cnfg
AIR-AP1220B-J-K9	802.11b AP w/Avail CBus Slot, Japan Cnfg
AIR-AP1210	IOS based AP Platform, Cardbus and MPCI Slots (no radio), Enet Uplink
AIR-AP1230B-A-K9	IOS based 802.11b AP w/Avail CBus Slot, FCC Cnfg
AIR-AP1230B-E-K9	IOS based 802.11b AP w/Avail CBus Slot, ETSI Cnfg
AIR-AP1230A-J-K9	IOS based 802.11a AP w/Avail MPCI Slot, Enet Uplink, TELEC Cnfg
AIR-AP1230B-J-K9 I	OS based 802.11b AP w/Avail CBus Slot, Japan Cnfg
AIR-AP1231G-A-K9	802.11g IOS AP w/Avail CBus Slot, FCC Cnfg
AIR-AP1231G-E-K9	802.11g IOS AP w/Avail CBus Slot, ETSI Cnfg
AIR-AP1231G-J-K9	802.11g IOS AP w/Avail CBus Slot, Japan Cnfg

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the Distribution Product Reference Guide at: http://www.cisco.com/dprg (limited country availability)

For More Information

See the Cisco Aironet Web site: **http://www.cisco.com/go/aironet**

Cisco Aironet 1300 Series

The Cisco Aironet 1300 Series is an 802.11g access point and bridge that provides high-speed and cost-effective wireless connectivity between multiple fixed or mobile networks and clients.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco Aironet 1300 Series	• When you need a high-capacity and high-security WLAN in the enterprise office
	• When you need two high-performance radios providing simultaneous support for the 802.11a and 802.11g standards offering 108 Mbps capacity for your growing WLAN
	• Provides a flexible, easy-to-use solution meeting requirements of wide-area networking professionals

Key Features

- Network connections within a campus area; Outdoor infrastructure for mobile networks and users; Public access for outdoor areas
- Supports temporary networks for portable or military operations
- Supports the 802.11g standard providing 54-Mbps data rates with secure technology while maintaining full backward compatibility with legacy 802.11b devices
- Easy maintenance and installation by integrating it with your wired network via SWAN solution
- Provides advanced features such as Fast Secure Roaming, QoS, and VLANs based on Cisco IOS Software
- Operates as a wireless bridge, access point, or a workgroup bridge
- Provides ongoing savings of leased-line expenses, a method to connect networks despite physical barriers such as lakes or highways, and rapid deployment of network connections
- Wifi-certified in Access Point mode

Specifications

Compatibility	Access Point—Compatible with any Wi-Fi certified client device for basic capability; Compatible with Cisco Aironet clients and Cisco Compatible clients for extended capability
	Workgroup Bridge—Supports operation with Cisco Aironet access points and Cisco bridges
Air interface standard[1]	IEEE 802.11b or IEEE 802.11g
Frequency band	2.412 to 2.462 GHz (FCC); 2.412 to 2.472 GHz (ETSI); 2.412 to 2.472 GHz (TELEC)

Wireless modulation	802.11b—Direct Sequence Spread Spectrum (DSSS): Differential Binary Phase Shift Keying (DBPSK) at 1 Mbps; Differential Quadrature Phase Shift Keying (DQPSK) at 2 Mbps; Complementary Code Keying (CCK) at 5.5 and 11 Mbps
	802.11g—Orthogonal Frequency Divisional Multiplexing (OFDM): BPSK at 6 and 9 Mbps; QPSK at 12 and 18 Mbps; 16-quadrature amplitude modulation (QAM) at 24 and 36 Mbps; 64-QAM at 48 and 54 Mbps
Media access protocol	Carrier Sense Multiple Access/Collision Avoidance (CSMA/CA)
Operating channels	802.11b/g—ETSI: 13; Americas: 11; TELEC (Japan): 13
Non-overlapping channels	3
Security	Bridge—Authentication: 802.1X support including LEAP to yield mutual authentication and dynamic per-user, per-session encryption keys; Encryption: Cisco TKIP, key hashing (per-packet keying) and message, Integrity Check (MIC), AES-ready
	Access Point: Authentication: 802.1X support including LEAP, PEAP, EAP Message Digest 5 (EAP MD5), EAP TLS, and EAP FAST to yield mutual authentication and dynamic per-user, per-session encryption keys;
	Encryption: Cisco TKIP and WPA TKIP; key hashing (per-packet keying) and MIC; AES-ready
	Workgroup-Bridge—Authentication: 802.1X support including LEAP to yield mutual authentication and dynamic per-user, per-session encryption keys; Encryption: Cisco TKIP, key hashing (per-packet keying) and MIC, AES-ready
Warranty	One year
SNMP compliance	Versions 1 and 2

1. Bridge mode has enhancements to the standard to allow longer-range bridging communication

Specifications (Con.)

Feature	AIR-BR1310G-x-K9	AIR-BR1310G-x-K9-R
Available transmit power settings[1]	802.11b: 100 mW (20 dBm), 50 mW (17 dBm), 30 mW (15 dBm), 20 mW (13 dBm), 10 mW (10 dBm), 5 mW (7 dBm), 1 mW (0 dBm); 802.11g: 30 mW (15 dBm); 20 mW (13 dBm); 10 mW (10 dBm); 5 mW (7 dBm); 1 mW (0 dBm)	Same as AIR-BR1310G-x-K9
Maximum operational receive level	-20 dBm	Same as AIR-BR1310G-x-K9
Maximum survivable receive level	10 dBm	Same as AIR-BR1310G-x-K9
Receive sensitivity (10 percent with 3200-byte packets)	1 Mbps: -94 dBm, 2 Mbps: -91 dBm, 5.5 Mbps: -89 dBm 11 Mbps: -85 dBm; 6 Mbps: -90 dBm, 9 Mbps: -89 dBm; 12 Mbps: -86 dBm, 18 Mbps: -84 dBm; 24 Mbps: -81 dBm, 36 Mbps: -77 dBm; 48 Mbps: -73 dBm, 54 Mbps: -72 dBm	Same as AIR-BR1310G-x-K9
Access-point role (Outdoor range)	Americas: 865 feet (260 meters) at 54 Mbps, 3465 feet (1055 meters) at 11 Mbps; ETSI: 150 feet (45 meters) at 54 Mbps, 775 feet (235 meters) at 11 Mbps; TELEC: 485 feet (145 meters) at 54 Mbps, 1095 feet (330 meters) at 11 Mbps Note: Access Point with 13 dBi integrated antenna and Cisco clients	Americas: 350 feet (105 meters) at 54 Mbps, 1410 feet (430 meters) at 11 Mbps; ETSI: 195 feet (60 meters) at 54 Mbps, 630 feet (190 meters) at 11 Mbps; TELEC: 195 feet (60 meters) at 54 Mbps, 445 feet (135 meters) at 11 Mbps Note: Access Point with 5.2dBi patch antenna and Cisco clients
Bridge role (Point-to-point range)[2]	Americas: 1.3 miles (2 km) at 54 Mbps, 9 miles (15 km) at 11 Mbps, EMEA: 0.2miles (0.36Km) at 54 Mbps, 2.3 miles (3.5 km) at 11 Mbps; TELEC: 0.7 miles (1.1Km) at 54 Mbps, 3.2 miles (5 km) at 11 Mbps Note: 13 dBi integrated antenna at root and non-root bridge	Americas: 4.5 miles (7 km) at 54 Mbps, 14 miles (23 km) at 11 Mbps; EMEA 5.5 miles (9 km) at 11 Mbps; TELEC: 4.5 miles (7 km) at 54 Mbps, 12 miles (20 km) at 11 Mbps Note: 21-dBi dish antenna at root and non-root bridge
Bridge role (Point-to-multipoint range)[2]	Americas: 1.1 miles (1.8 km) at 54 Mbps, 8 miles (13 km) at 11 Mbps; EMEA: 0.25 miles (0.4Km) at 54 Mbps, 1.1 miles (1.8 km) at 11 Mbps; TELEC: 0.8 miles (1.3Km) at 54 Mbps, 3.6 miles (5.8 km) at 11 Mbps Note: 14-dBi sector antenna at root and 13dBi integrated antenna at non-root	Americas: 2.0 miles (3.3 km) at 54 Mbps, 10 miles (16 km) at 11 Mbps; EMEA: 2.5 miles (4 km) at 11 Mbps; TELEC: 2.0 miles (3.3 km) at 54 Mbps; 9.0 miles (14 km) at 11 Mbps Note: 14-dBi sector at root and 21-dBi dish at non-root

	AIR-BR1310G-x-K9 and AIR-BR1310G-x-K9-R	AIR-PWRINJ-BLR2 and AIR-PWRINJ-BLR2T
Dimensions	8 in. x 8.1 in. x 3.12 in. (20.3 cm x 20.57 cm x 7.87 cm)	4.62 in. x 4.76 in. x 1.07 in. (11.73 cm x 12.09 cm x 2.71 cm)
Weight	2.5 lb (1.25 kg)	2 lb (1 kg)
Operational temperature	-22½ to 131½F (-30½ to 55½C)	Same As AIR-BR1310G-x-K9 and AIR-BR1310G-x-K9-R
Storage temperature	-40½ to 185½F (-40½ to 85½C)	Same As AIR-BR1310G-x-K9 and AIR-BR1310G-x-K9-R
Operational altitude	13,800 ft (4206 m)	Same As AIR-BR1310G-x-K9 and AIR-BR1310G-x-K9-R
Storage altitude	16,000 ft (4877 m)	Same As AIR-BR1310G-x-K9 and AIR-BR1310G-x-K9-R
Humidity	0 to 100% at 100½F (38½C) (condensing)	0 to 90% at 100½F (38½C) (non-condensing)

1. Maximum power setting will vary according to individual country regulations
2. The distances referenced here are approximations and should be used for estimation purposes only.

Selected Part Numbers and Ordering Information

Cisco Aironet 1300 Series

AIR-BR1310G-A-K9	2.4 GHz (802.11g) Outdoor Access Point /Bridge with integrated patch antenna (FCC regulatory domain)
AIR-BR1310G-A-K9-R	(FCC regulatory domain) 2.4 GHz (802.11g) Outdoor Access Point /Bridge with RP-TNC type connector

For More Information

See the Cisco Aironet Web site: **http://www.cisco.com/go/aironet**

Cisco Aironet 802.11a/b/g Wireless Cardbus and PCI Adapters

The Cisco Aironet IEEE 802.11a/b/g Wireless CardBus and PCI Adapters provides high-performance 54 Mbps connectivity in the 2.4 and 5 GHz bands that combines the freedom of wireless connectivity with the performance, security, and manageability that businesses require. Key components of SWAN.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco Aironet 802.11a/b/g Wireless Cardbus Adapter	• Those who want mobility within the enterprise to increase productivity, as an addition or alternative to wired networks or need flexibility for frequent LAN wiring changes • Those whose site is not conducive to LAN wiring because of building or budget limitations, such as older buildings, leased space or temporary sites

Key Features

- Secure network communications using the Cisco Wireless Security Suite
- Includes the Aironet Desktop Utility (ADU), Aironet System Tray Utility (ASTU), and Aironet Client Administration Utility (ACAU)
- World mode for international roaming
- Superior range and throughput
- Supports single 802.11b coverage, single 802.11g coverage, single 802.11a coverage, dual-mode 802.11a/g coverage or tri-mode 802.11a/b/g coverage
- Wi-Fi Certified; Support for WPA
- PCI Adapter—Optimal placement for maximum performance using dual-band 2.4/5 GHz 1 dBi effective gain antenna has a 2-meter cable
- PCI Adapter—Provides a low-profile form factor and two-meter cable length providing flexibility for installation in low-profile devices, such as slim desktops and point-of-sale (POS) devices.

Specifications

Feature	Cisco Aironet 802.11a/b/g Wireless Cardbus Adapter	Cisco Aironet 802.11a/b/g Wireless PCI Adapter
Form Factor	CardBus Type II	Standard and Low Profile Type II PCI
Interface	32-bit Cardbus with standard 68-pin connector; PC-Card Rev. 7.0 compliant	Standard PCI Interface, PCI Rev. 2.3 compliant
Data Rates Supported	1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54 Mbps	Same as Cardbus Adapter
Network Standard	IEEE 802.11a/b/g	Same as Cardbus Adapter
Operating Voltage	3.3 V (±0.3 V)	Same as Cardbus Adapter
Media Access Protocol	Carrier-Sense Multiple Access w/ Collision Avoidance (CSMA/CA)	Same as Cardbus Adapter
Wireless Medium	802.11g: Direct Sequence Spread Spectrum (DSSS) and Orthogonal Frequency Divisional Multiplexing (OFDM); 802.11a: OFDM	Same as Cardbus Adapter
Modulation	802.11b: DSSS--Differential Binary Phase Shift Keying (DBPSK) @ 1 Mbps; Differential Quadrature Phase Shift Keying (DQPSK) @ 2 Mbps; Complementary Code Keying (CCK) @ 5.5 and 11 Mbps 802.11g and 802.11a: OFDM--BPSK @ 6 and 9 Mbps; QPSK @ 12 and 18 Mbps; 16-Quadrature Amplitude Modulation (QAM) @ 24 and 36 Mbps; 64-QAM @ 48 and 54 Mbps	Same as Cardbus Adapter

Frequency Bands	2.40 to 2.4897 GHz; 5.15 to 5.35 GHz (FCC UNII 1 and UNII 2); 5.725 to 5.85 GHz (FCC UNII 3); 5.15 to 5.35 GHz (ETSI); 5.470 to 5.725 (ETSI); 5.15 to 5.25 GHz (Japan)	Same as Cardbus Adapter
Range (With 2.2 dBi dipole antenna for 802.11g and 802.11b and 6 dBi gain patch for 802.11a)	802.11a--Indoor: 45 ft (13 m)@ 54 Mbps, 110 ft (33 m) @ 18 Mbps, 165 ft (50 m) @ 6 Mbps; Outdoor: 100 ft (30 m) @ 54 Mbps, 600 ft (183 m) @ 18 Mbps, 1000 ft (304 m) @ 6 Mbps	Same as Cardbus Adapter
	802.11b/g—Indoor: 90 ft (27 m) @ 54 Mbps, 180 ft (54m) @ 18 Mbps, 160 ft (48 m) @ 11 Mbps, 300 ft (91 m) @ 6 Mbps, @ 410 ft (124 m); Outdoor: 250 ft (76 m) @ 54 Mbps, 600 ft (183 m) @ 18 Mbps, 1000 ft (304 m) @ 11 Mbps, 1300 ft (396 m) @ 6 Mbps, 2000 ft (610 m) @ 1 Mbps	
Antenna[1]	Integrated diversity dual-band 2.4/5 GHz antenna	
Security Architecture Client Authentication (Cisco Wireless Security Suite)	Authentication: WPA and 802.1X support for Cisco LEAP, PEAP-GTC, PEAP-MSCHAPv2, and EAP-TLS; MAC address and by standard 802.11 authentication mechanisms	Same as Cardbus Adapter
	Encryption: Support for static and dynamic IEEE 802.11 WEP keys of 40 bits and 128 bits; Cisco TKIP and WPA TKIP encryption enhancements: key hashing (per-packet keying), message integrity check (MIC) and broadcast key rotation	
Drivers	Windows XP and Windows 2000	Same as Cardbus Adapter
Dimensions	2.05 in. (52.08mm) wide x 4.46 in. (113.35mm) deep x 0.19 in. (4.80mm) high	4.72 in. (119.9mm) Wide x 3.12205 in. (79.3mm) High
Weight	1.6 oz (44.0g)	Standard (frame) PCI w/Antenna: 3.64 oz. (103.2 g), Standard (frame) PCI w/o Antenna: 1.92 oz. (54.7 g), Low Profile PCI w/Antenna: 3.43 oz. (97.5 g), Low Profile PCI w/o Antenna: 1.72 oz. (49.0 g)
Warranty	One Year	Same as Cardbus Adapter

1. For detailed information on antennas, visit **http://www.cisco.com/go/aironet**

For More Information

See the Cisco Aironet Web site: **http://www.cisco.com/go/aironet**

Cisco Aironet 5 GHz 54 Mbps Wireless Client Adapter

The Cisco Aironet 5 GHz 54 Mbps Wireless LAN client adapter is an IEEE 802.11a-compliant CardBus adapter that operates in the UNII-1 and UNII-2 bands. The client adapter complements the Cisco Aironet 1200 Series 802.11a Access Point, providing a solution that combines performance and mobility with the security and manageability that enterprises require.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco Aironet 5 GHz 54Mbps Wireless LAN Client Adapters	• Industry leading security: IEEE 802.11x support, including LEAP and EAP-TLS, for mutual authentication and dynamic per-user, per session WEP keys • Multiple transmit power settings (20 mW/(13 dBm), 10 mW/(10 dBm), and 5 mW (7 dBm) • End-to-end Cisco branded solution

Key Features

- IEEE 802.11a-compliant CardBus adapter that operates in the UNII-1 and UNII-2 bands
- Complements the Cisco Aironet 1200 Series 802.11a Access Point, providing a solution that combines performance and mobility with the security and manageability that enterprises require
- Uses Cisco Wireless Security Suite for user-based authentication which supports a variety of 802.11x authentication types including LEAP and EAP-Transport Layer Security (EAP-TLS)
- Configure, monitor, and manage using ACU. Includes site-survey tools to assist in the placement of access points

Specifications

Feature	Cisco Aironet 5 GHz 54 Mbps Wireless Client Adapter
Form Factor	CardBus Type II
Interface	32-bit CardBus (PCI)
Operational voltage	3.3 V (+/- 0.33 V)
LED	Status (green) and Activity (amber)
Data Rates Supported	6, 9, 12, 18, 24, 36, 48, 54 Mbps (configurable as fixed or auto selecting to extend range)
Network Standard	IEEE 802.11a
Frequency Band	5.15 to 5.35 GHz (FCC UNII 1 and UNII 2); 5.15 to 5.25 GHz (TELEC); 5.15 to 5.25 GHz (Singapore); 5.25 to 5.35 GHz (Taiwan)
Network architecture type	Infrastructure, star topology
Media Access Protocol	Carrier sense multiple access with collision avoidance (CSMA/CA)
Wireless Medium	Orthogonal Frequency Division Multiplexing (OFDM)
Modulation	(OFDM sub-carrier); BPSK @ 6 and 9 Mbps; QPSK @ 12 and 18 Mbps; 16-QAM @ 24 and 36 Mbps; 64-QAM @ 48 and 54 Mbps
Operating Channels	FCC: 8 channels (UNII-1 4 channels and UNII-2 4 channels); 4 channels for Japan, Singapore, and Taiwan
Available Transmit Power Settings[1]	20 mW (13 dBm);10 mW (10 dBm); 5 mW (7 dBm)
	Maximum power setting will vary according to individual country regulations.
Current steady state (typical)	·Transmit: 520 mA; Receive: 580 mA; Sleep: 20 mA
Range	Omni directional Antenna: Indoor: 60 ft (18m)@ 54 Mbps, 130 ft (40m) @ 18 Mbps, 170 ft (52m) @ 6 Mbps
	Outdoor: 100 ft (30m) @ 54 Mbps, 600 ft (183m) @ 18 Mbps, 1000 ft (304m) @ 6 Mbps
	Patch Antenna: Indoor: 70 ft (21m) @ 54 Mbps, 150 ft (45m) @ 18 Mbps, 200 ft (61m) @ 6 Mbps
	Outdoor: 120 ft (36m) @ 54 Mbps, 700 ft (213m) @ 18 Mbps, 1200 ft (355m) @ 6 Mbps
Power Management	3 levels of power consumption available, including: CAM (Constantly Awake Mode), Fast PSP (Power Save Mode), Max PSP (Maximum Power Savings)
Antenna	Integrated 5dBi gain patch antenna
Security architecture client authentication	Cisco Wireless Security Suite including: Authentication: 802.11x support for LEAP and EAP-TLS to yield mutual authentication and dynamic, per-user, per-session WEP keys; MAC address and by standard 802.11 authentication mechanisms
	Encryption: Support for static and dynamic IEEE 802.11 WEP keys of 40 bits and 128 bits; Pre-standard TKIP WEP enhancements: key hashing (per-packet keying), message integrity check (MIC) and broadcast key rotation
Drivers	Windows, 98/98SE, Windows ME, Windows 2000 and Windows XP
Environmental	-30º to 70ºC; 95% humidity (noncondensing)
Warranty	One year

1. Management Information Base

For More Information

See the Cisco Aironet Web site: **http://www.cisco.com/go/aironet**

Cisco Aironet 350 Series Client Adapters

Wireless client adapters are the key to adding mobility and flexibility to an enterprise—increasing productivity by enabling users to have network and Internet access anywhere within a building without the limitation of wires. The Cisco Aironet 350 Series 802.11b Client Adapters are a complement to Aironet 350 Series infrastructure devices, providing an enterprise-ready solution that combines mobility with the performance, security, and manageability.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco Aironet 350 Series Client Adapters	• IT Professionals or business executives want mobility within the enterprise to increase productivity, as an addition or alternative to wired networks or need flexibility for frequent LAN wiring changes, either throughout the site or in selected areas
	• Those whose site is not conducive to LAN wiring because of building or budget limitations, such as older buildings, leased space or temporary sites

Key Features

- Superior range and throughput for IEEE 802.11b networks
- Secure network communications
- Available in PCMCIA and PCI form factors
- World mode for international roaming
- Supports LEAP authentication for secure wireless transmissions
- Full-featured utilities for easy configuration and management
- Compliance with the IEEE 802.11b high-rate standard
- Support for popular operating systems

Specifications

Feature	Cisco Aironet 350 Series Client Adapters
Data Rates Supported	1, 2, 5.5, and 11 Mbps
Network Standard	IEEE 802.11b
System Interface	AIR-PCM35x: PC Card (PCMCIA) Type II; AIR-PCI 35x: peripheral component interconnect (PCI) Bus
Frequency Band	2.4 to 2.4897 GHz
Network Architecture Types	Infrastructure and ad hoc
Wireless Medium	Direct Sequence Spread Spectrum (DSSS)
Media Access Protocol	Carrier sense multiple access with collision avoidance (CSMA/CA)
Modulation	DBPSK @1 Mbps; DQPSK @ 2 Mbps; CCK @ 5.5 and 11 Mbps
Operating Channels	North America: 11; ETSI: 13; Japan: 14
Nonoverlapping Channels	Three
Receive Sensitivity	1 Mbps: -94 dBm; 2 Mbps: -91 dBm; 5.5 Mbps: -89 dBm; 11 Mbps: -85 dBm
Delay Spread	1 Mbps: 500 ns; 2 Mbps: 400 ns; 5.5 Mbps: 300 ns; 11 Mbps: 140 ns
Available Transmit Power Settings[1]	100 mW (20 dBm); 50 mW (17 dBm); 30 mW (15 dBm); 20 mW (13 dBm); 5 mW (7 dBm); 1 mW (0 dBm)
Range (typical)	Indoor: 130 ft (40 m) @ 11 Mbps; 350 ft (107 m) @ 1 Mbps Outdoor: 800 ft (244 m) @ 11 Mbps; 2000 ft (610 m) @ 1 Mbps
Compliance	Operates license free under FCC Part 15 and complies as a Class B device; complies with DOC regulations; complies with ETS 300.328, FTZ 2100, and MPT 1349 standards
Operating Systems Supported	Windows 95, 98, NT 4.0, 2000, ME, XP, CE 2.11, CE 3.0, Mac OS 9.x, and Linux
Antenna	AIR-PCM35x: Integrated diversity dipoles AIR-LMC35x: Two MMCX connectors (antennas optional, none supplied with unit) AIR-PCI35x: External, removable 2.2 dBi Dipole with RP-TNC Connector
Encryption Key Length	128-bit
Authentication Type	EAP-Cisco Wireless LEAP
Status Indicators	Link Status and Link Activity
Dimensions (W x D x H)	AIR-PCM35x: 2.13 in. (5.4 cm) x 4.37 in. (11.1 cm) x 0.1 in. (0.3 cm) AIR-LMC35x: 2.13 in. (5.4 cm) x 3.31 in. (8.4 cm) x 0.1 in. (0.3 cm) AIR-PCI35x: 6.6 in. (16.8 cm) x 3.9 in. (9.8 cm) x .5 in. (1.3 cm)
Weight	AIR-PCM35x: 1.6 oz (45g); AIR-LMC35x: 1.4 oz (40g); AIR-PCI35x: 4.4 oz (125g)
Environmental	AIR-PCM35x and AIR-LMC35x: -22° to 158° F (-30° to 70° C); AIR-PCI35x: 32° to 131° F (0° to 55° C); 10 to 90% (noncondensing)
Input Power Requirements	+5 VDC =/- 5%
Typical Power Consumption (at 100 mW transmit power setting)	Transmit: 450 mA; Receive: 270 mA; Sleep mode: 15 mA

1. Maximum power setting will vary according to individual country regulations.

Selected Part Numbers and Ordering Information[1]

Cisco Aironet 350 Series Client Adapters

AIR-PCM352	350 Series PC Card with Diversity Antennas & 128-bit WEP
AIR-PCI352	350 Series PCI Card with 2.2 dBi Dipole Antenna & 128-bit WEP

1. This may be only a subset of all parts available via URL listed under "For More Information."

For More Information

See the Cisco Aironet Web site: **http://www.cisco.com/go/aironet**

Cisco Aironet 1400 Series Wireless Bridge

The Cisco Aironet 1400 Series Wireless Bridge provides a high-performance and feature-rich solution for connecting multiple LANs in a metro area.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco Aironet 1400 Series Wireless Bridge	• A cost-effective, high-bandwidth way to connect networks in multiple locations within a metro area • A rapid payback period and a lower total cost of ownership than a leased line • High performance data rates of 54 Mbps at point-to-point ranges of 7.5 miles and 2 miles for point-to-multipoint ranges

Key Features

- Support for both point-to-point or point-to-multipoint configurations
- Industry leading range and throughput, supporting data rates up to 54 Mbps
- Enhanced security mechanisms based on 802.11 standards
- Ruggedized enclosure optimized for harsh outdoor environments with extended operating temperature range
- Integrated or optional external antennas for flexibility in deployment
- Designed specifically for ease-of-installation and operation

Specifications

Feature	AIR-BR1410A-A-K9	AIR-BR1410A-A-K9-N	Power Injector LR
Frequency band	5.725 to 5.825 GHz (FCC UNII 3)	Same as AIR-BR1410A-A-K9	
Wireless modulation	Coded Orthogonal Frequency Division Multiplexing (COFDM)	Same as AIR-BR1410A-A-K9	
Media access protocol	Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA)	Same as AIR-BR1410A-A-K9	
Modulation	BPSK @ 6 and 9 Mbps, QPSK @ 12 and 18 Mbps, 16-QAM @ 24 and 36 Mbps, 64-QAM @ 48 and 54 Mbps	Same as AIR-BR1410A-A-K9	
Non-overlapping channels	4	Same as AIR-BR1410A-A-K9	
Receive sensitivity (10% PER with 3200byte packets)	6 Mbps: -83 dBm, 9 Mbps: -83 dBm,12 Mbps: -81 dBm, 18 Mbps: -80 dBm, 24 Mbps: -77 dBm, 36 Mbps: -74 dBm, 48 Mbps: -70 dBm, 54 Mbps: -68 dBm	Same as AIR-BR1410A-A-K9	
Maximum Operational Receive Level	-19 dBm	Same as AIR-BR1410A-A-K9	
Maximum Survivable Receive Level	0 dBm	Same as AIR-BR1410A-A-K9	
Available transmit power settings	250 mW (24 dBm), 200 mW (23 dBm), 155 mW (22 dBm), 125 mW (21 dBm), 60 mW (18 dBm), 30 mW (15 dBm), 15 mW (12 dBm) Maximum power setting will vary according to individual country regulations	Same as AIR-BR1410A-A-K9	
Point-to-point range1	7.5 miles (13 km) @ 54 Mbps, 16 miles (26 km) @ 9 Mbps	12 miles (19 km) @ 54 Mbps, 23 miles (37 km) @ 9 Mbps, (Antennas are 28 dBi dish)	
Point-to-multipoint range (sector antenna at root)2	2 miles (3 km) @ 54 Mbps, 8 miles (13 km) @ 9 Mbps	4 miles (7 km) @ 54 Mbps, 11 miles (18 km) @ 9 Mbps, (Non-root antenna is 28 dBi dish)	
Antenna	Captured Linear Polarization; 22.5dBi gain: 10 E-plane by 12 H-plane beamwidth	One N-Type connector for professional installations (antennas sold separately)	

Feature	AIR-BR1410A-A-K9	AIR-BR1410A-A-K9-N	Power Injector LR
Security	Cisco Wireless Security Suite, including: Authentication: 802.1x support including LEAP to yield mutual authentication and dynamic per-user, per-session encryption keys Encryption: Support for static and dynamic IEEE 802.11 WEP keys of 40 bits and 128 bits Pre-standard TKIP WEP enhancements: key hashing (per packet keying) and Message Integrity Check (MIC)	Same as AIR-BR1410A-A-K9	
SNMP compliance	v1 and v2	Same as AIR-BR1410A-A-K9	
Status LEDs	Four LEDs: Install, Radio, Status, Ethernet	Same as AIR-BR1410A-A-K9	Four LEDs: Power ON, Injector status, LAN Ethernet status, Bridge Ethernet status
RSSI port	BNC connector DC Voltage port (0VDC to 2.7 VDC)	BNC connector DC Voltage port (0VDC to 2.7 VDC)	NA
Uplink	100 Mbps over dual coaxial cables	100 Mbps over dual coaxial cables	10/100BaseT Ethernet
Configuration support	Telnet, HTTP, FTP, TFTP, SNMP	Telnet, HTTP, FTP, TFTP, SNMP	NA
Compliance	Standards: Safety: UL 60950, CSA C22.2 No. 60950-00, IEC 60950, EN 60950 Radio Approvals: FCC Part 15.207, 15.407, & 15.209 Class B, ICES-003 Class B (Canada), Canada DGTP-010, FCC Bulletin OET-65C, Industry Canada RSS-102, RSP100, RSS 210 Issue 5 EMI and Susceptibility (ClassB): FCC Part 15.107 & 15.109 Class B, ICES-003 Class B (Canada), EN 55022 Class B, EN 55024	Standards: Safety: UL 60950, CSA C22.2 No. 60950-00, IEC 60950, EN 60950, NEMA 4 Radio Approvals: FCC Part 15.207, 15.407, & 15.209 Class B, ICES-003 Class B (Canada), Canada DGTP-010, FCC Bulletin OET-65C, Industry Canada RSS-102, RSP100, RSS 210 Issue 5 EMI and Susceptibility (ClassB): FCC Part 15.107 & 15.109 Class B, ICES-003 Class B (Canada), EN 55022 Class B, EN 55024	Standards: Safety: UL 60950, CSA C22.2 No. 60950-00, IEC 60950, EN 60950 EMI and Susceptibility (ClassB): FCC Part 15.107 & 15.109 Class B, ICES-003 Class B (Canada), EN 55022 Class B, EN 55024
Dimensions	11.4in x 11.4in x 4.2in (29cm x 29cm x 11cm)	11.6in x 11.6in x 3.6in (29cm x 29cm x 9cm)	6.7in x 6.3in x 1.3in (17cm x 16cm x 3cm)
Weight	11 lbs. (5 kg)	10 lbs. (5 kg)	1.4lbs. (0.6kg)
Operational temperature	-30 to +55C (-22 to +131F)	Same as AIR-BR1410A-A-K9	0 to +50C (32 to 122F)
Storage temperature	-40 to +85C (-40 to +185F)	Same as AIR-BR1410A-A-K9	-40 to +70C (-40 to +158F)
Operational altitude	4206 m (13,800 ft.)	Same as AIR-BR1410A-A-K9	Same as AIR-BR1410A-A-K9
Storage altitude	4877 m (16,000 ft.)	Same as AIR-BR1410A-A-K9	Same as AIR-BR1410A-A-K9
Humidity	0 to 100% (condensing)	Same as AIR-BR1410A-A-K9	0 to 90% (non-condensing)
Vibration	0.001 G2/Hz from 5 - 100 Hz	Same as AIR-BR1410A-A-K9	Same as AIR-BR1410A-A-K9
Storage vibration	0.01 G2/Hz from 5 - 100 Hz	Same as AIR-BR1410A-A-K9	Same as AIR-BR1410A-A-K9
Enclosure	Aluminum with environmentally sealed plastic radome	NEMA-4, aluminum	Metal case
AC power	Not Required as uses DC voltage from Power Injector	Same as AIR-BR1410A-A-K9	100 to 240 VAC, +/- 10% (power supply)
DC power	48 VDC +/-2V	Same as AIR-BR1410A-A-K9	Same as AIR-BR1410A-A-K9
Warranty	One year	Same as AIR-BR1410A-A-K9	Same as AIR-BR1410A-A-K9

For More Information

See the Cisco Aironet Web site: **http://www.cisco.com/go/aironet**

Cisco Aironet 350 Series Workgroup Bridge

Designed to meet the needs of remote workgroups, satellite offices, and mobile users, the Cisco Aironet 350 Series Workgroup Bridge brings the freedom and flexibility of wireless connectivity to any Ethernet-enabled device.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco Aironet 350 Series Workgroup Bridge	• Connectivity to a network for remote workgroups located in an area that may be difficult or not practical for wiring • Provides in road to remote offices and branches

Key Features

- Supports WEP security architecture and provides up to 128-bit encryption
- Receive a single-session, single-user encryption key from the RADIUS server via the associated AP with a username and password stored statically or in dynamic memory within the workgroup bridge; Standards-based centralized security
- Easily connect up to eight devices; Driverless installation
- Based upon an IEEE 802.11x standard utilizing EAP
- Optimum wireless performance and range
- Full-featured utilities and robust management
- WiFi-Certified

Specifications

Feature	Cisco Aironet 350 Series Workgroup Bridge
Data Rates Supported	1, 2, 5.5, and 11 Mbps
Client Interface	10BaseT Ethernet
Clients Supported	Direct: One Via hub: Eight
Network Architecture Types	Infrastructure (via Cisco Aironet Access Point or Bridge)
Frequency Band	2.4 to 2.4897 GHz
Wireless Medium	Direct Sequence Spread Spectrum (DSSS)
Media Access Protocol	Carrier sense multiple access with collision avoidance (CSMA/CA)
Modulation	DBPSK @1 Mbps; DQPSK @ 2 Mbps; CCK @ 5.5 and 11 Mbps
Operating Channels	North America: 11; ETSI: 13; Japan: 14
Nonoverlapping Channels	Three
Receive Sensitivity	1 Mbps: -94 dBm; 2 Mbps: -91 dBm; 5.5 Mbps: -89 dBm; 11 Mbps: -85 dBm
Delay Spread	1 Mbps: 500 ns; 2 Mbps: 400 ns; 5.5 Mbps: 300 ns; 11 Mbps: 140 ns
Available Transmit Power Settings[1]	100 mW (20 dBm); 50 mW (17 dBm); 30 mW (15 dBm); 20 mW (13 dBm); 5 mW (7 dBm); 1 mW (0 dBm)
Range (typical)	Indoor: 130 ft (40 m) @ 11 Mbps; 350 ft (107 m) @ 1 Mbps Outdoor: 800 ft (244 m) @ 11 Mbps; 2000 ft (610 m) @ 1 Mbps
Compliance	Operates license free under FCC Part 15 and complies as a Class B device; complies with DOC regulations; complies with EN 300.328 standards
SNMP Compliance	MIB I and MIB II
Antenna	AIR-WGB352C: One nonremovable 2.2-dBi dipole AIR-WGB352R: Two RP-TNC connectors (antennas optional, none supplied with unit)
Encryption Key Length	AIR-WGB352x: 128-bit
Remote Configuration Support	Telnet, HTTP, FTP, TFTP, and SNMP
Dimensions (W x D x H)	6.30 in. (16 cm) x 4.72 in. (12 cm) x 1.45 in. (3.7 cm)
Weight	12.3 oz (350g)
Environmental	Temperature: 32° to 122° F (0° to 50° C); 10 to 90% (Noncondensing)
Input Power Requirements	North American: 120 VAC @ 60 Hz; Universal: 90 to 264 VAC @ 47 to 63 Hz

1. Maximum power setting will vary according to individual country regulations.

Selected Part Numbers and Ordering Information

Cisco Aironet 350 Series Workgroup Bridge

AIR-WGB352C	350 Series Workgroup Bridge with Captured Antenna & 128-bit WEP
AIR-WGB352R	350 Series Workgroup Bridge with Dual RP-TNC & 128-bit WEP

For More Information

See the Cisco Aironet Web site: **http://www.cisco.com/go/aironet**

Cisco Aironet 350 Series Wireless Bridge

The Cisco Aironet 350 Series Wireless Bridge enables high-speed long-range outdoor links between buildings and is ideal for installations subject to plenum rating and harsh environments. The 802.11b wireless bridge delivers high data rates and superior throughput for data-intensive, line-of-sight applications. The bridges connect hard-to-wire sites, noncontiguous floors, satellite offices, school or corporate campus settings, temporary networks, and warehouses.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco Aironet 350 Series Ethernet Bridge	• Any company who needs to connect sites into a single LAN, even when separated by obstacles such as freeways, railroads and bodies of water that are normally inaccessible via cabling.
	• Business owners who want a low-cost, easy-to-deploy solution for connecting line-of-sight networks located in different buildings or want multiple buildings on a campus to share a single high-speed line to the Internet
	• Any company who needs equipment for harsh indoor environments or outdoor NEMA enclosures
	• Increase revenue opportunity with site surveys and installations.

Key Features

- High-speed (11-Mbps), high-power (100-mW) radios, delivering building-to-building links of up to 25 miles (40.2 km)
- A metal case for durability and plenum rating and an extended operating temperature rating for harsh environments
- Supports both point-to-point and point-to-multipoint configurations allowing multiple sites to share a single, high-speed connection to the Internet
- Broad range of supported antennas
- Simplified installation, improved performance, and upgradeable firmware, ensuring investment protection
- Configurable as an access point
- Extended operating temperature range of -20° to 55° C

Specifications

Feature	Cisco Aironet 350 Series Wireless Bridge
Data Rates Supported	1, 2, 5.5, and 11 Mbps
Frequency Band	2.4 to 2.497 GHz
Wireless Medium	Direct Sequence Spread Spectrum (DSSS)
Media Access Protocol	Carrier sense multiple access with collision avoidance (CSMA/CA)
Modulation	DBPSK @1 Mbps; DQPSK @ 2 Mbps; CCK @ 5.5 and 11 Mbps
Operating Channels	North America: 11; ETSI: 13; Japan: 14
Nonoverlapping Channels	Three
Receive Sensitivity	1 Mbps: -94 dBm; 2 Mbps: -91 dBm; 5.5 Mbps: -89 dBm; 11 Mbps: -85 dBm
Delay Spread	1 Mbps: 500 ns; 2 Mbps: 400 ns; 5.5 Mbps: 300 ns; 11 Mbps: 140 ns
Available Transmit Power Settings[1]	100 mW (20 dBm); 50 mW (17 dBm); 30 mW (15 dBm); 20 mW (13 dBm); 5 mW (7 dBm); 1 mW (0 dBm)
Range[2]	18 miles (28.9 km) @ 11 Mbps; Up to 25 miles (40.2 km) @ 2 Mbps

Feature	Cisco Aironet 350 Series Wireless Bridge
Compliance	Operates license-free under FCC Part 15 and complies as a Class B device; complies with DOC regulations; complies with ETS 300.328, FTZ 2100, and MPT 1349 standards; complies with UL 2043 (The use of this device in a system operating either partially or completely outdoors may require the user to obtain a license for the system according to the Canadian regulations. For further information, contact your local industry Canada office.)
SNMP Compliance	MIB I and MIB II
Antenna	Two RP-TNC connectors (antennas optional, none supplied with unit)
Encryption Key Length	128-bit
Security	128-bit WEP in bridge mode; IEEE 802.11x (includes EAP and RADIUS) in AP mode
Status Indicators	Three indicators on the top panel provide information concerning association status, operation, error/warning, firmware upgrade, and configuration, network/modem, and radio status
Automatic Configuration Support	BOOTP and DHCP
Remote Configuration Support	Telnet, HTTP, FTP, TFTP, and SNMP
Local Configuration	Direct console port (with supplied serial cable)
Bridging Protocol	Spanning Tree
Dimensions	6.74 x 6.25 x 1.31 in. (17.1 x 15.9 x 3.3 cm)
Weight	1.43 lbs (.648 kg)
Environmental	Temperature: -4× to 131× F (-20× to 55× C) 10 to 90% (noncondensing)
Enclosure	Metal case (for plenum rating); UL 2043 certified
Input Power Requirements	24VDC 10% to 60 VDC (Ethernet line power)

1. Maximum power setting will vary according to individual country regulations
2. Typical and contingent on antenna used

Selected Part Numbers and Ordering Information[1]

Cisco Aironet 350 Series Wireless Bridge
AIR-BR350-x-K9   350 Series 11Mbps DSSS Bridge with 128-bit WEP
Cisco Aironet 350 Series Wireless Bridge Basic Maintenance
CON-SNT-PKG2   SMARTnet Maintenance for AIR-BR350-A-K9

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco Aironet Web site: **http://www.cisco.com/go/aironet**

Cisco Aironet Antennas and Accessories

Every wireless LAN deployment is different. When engineering an in-building solution, varying facility sizes, construction materials, and interior divisions raise transmission and multipath considerations. Cisco has the widest range of antennas, cable, and accessories available from any wireless manufacturer. Cisco offers a complete range of 2.4 GHz and 5 GHz antennas for access point and bridge equipment that enable a customized wireless solution for almost any installation
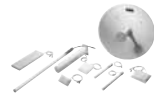
Key Features

- Client Adapter Antennas—To extend the transmission range for more specialized applications, a variety of optional, higher-gain antennas are provided that are compatible with selected client adapters
- Access Point Antennas—Compatible with all Cisco RP-TNC-equipped access points; Available with different gain and range capabilities, beam widths, and form factors
- Bridge Antennas—Available in directional configurations for point-to-point transmission and omnidirectional configuration for point-to-multipoint implementations

- Low-loss cable extends the length between any Cisco Aironet bridge and the antenna. With a loss of 6.7 dB per 100 feet (30m), low-loss cable provides installation flexibility without a significant sacrifice in range
- Complete range of antennas for 5 GHz bridging applications

Specifications

Access Point Antennas

Feature	AIR-ANT5959	AIR-ANT2410Y-R	AIR-ANT2012	AIR-ANT3213
Description	Diversity omni-directional ceiling mount	Yagi mast or wall mount	Diversity patch wall mount	Pillar mount diversity omni
Application	Indoor unobtrusive antenna, best for ceiling mount. Excellent throughput and coverage solution in high multipath cells and dense user population	Indoor/Outdoor directional antenna for use with Access Points or Bridges	Indoor/Outdoor, unobtrusive medium range antenna	Indoor, unobtrusive medium-range antenna
Approximate Indoor Range[1]	6 Mbps: 295 ft (90 m) 54 Mbps: 88 ft (27 m)	6 Mbps: 548 ft (167 m) 54 Mbps: 165 ft (50 m)	6 Mbps: 418 ft (127 m) 54 Mbps: 126 ft (38 m)	6 Mbps: 379 ft (121 m) 54 Mbps: 114 ft (35 m)
Cable Length	3 ft. (0.91m)	3 ft. (0.91 m)	3 ft. (0.91m)	3 ft. (0.91 m)
Dimensions	5.3 x 2.8 x 09. in. (13.5 x 7.1 x 2.3 cm)	7.25 x 5 in. (18.4 x 12.7 cm)	4.78 x 6.66 x .82 in. (12.14 x 10 x 1 in. (25.4 x 2.5 cm) 16.92 x 2.08 cm)	4 x 4
Weight	0.3 lbs. (0.14kg)	8 oz.	9.6 oz. (272g)	1 lb. (460g)

1. All range estimations are based on an integrated client adapter antenna associating with an access point under ideal indoor conditions. The distances referenced here are approximations and should be used for estimation only.

Access Point Antennas (cont.)

Feature	AIR-ANT1728	AIR-ANT4941	AIR-ANT3549	AIR-ANT1729
Description	High gain omnidirectional ceiling mount	2.2 dBi dipole antenna	Patch wall mount	Patch wall mount
Application	Indoor medium-range antenna, typically hung from crossbars of drop ceilings	Indoor omni-directional coverage	Indoor, unobtrusive, long-range antenna (may also be used as a medium-range bridge antenna)	Indoor, unobtrusive, medium-range antenna (may also be used as a medium-range bridge antenna)
Approximate Indoor Range[1]	6 Mbps: 379 ft (116 m) 54 Mbps: 114 ft (35 m)	6 Mbps: 300 ft (91 m) 54 Mbps: 90 ft (27 m)	6 Mbps: 507 ft (155 m) 54 Mbps: 153 ft (47 m)	6 Mbps: 403 ft (123 m) 54 Mbps: 121 ft (37 m)
Cable Length	3 ft. (0.91m)	N/A	3 ft. (0.91m)	3 ft. (0.91m)
Dimensions	Length: 9 in. (22.86 cm) Diameter: 1 in. (2.5 cm)	5.5 in. (14 cm)	5 x 5 in. (12.4 x 12.4 cm)	4 x 5 in. (9.7 x 13 cm)
Weight	4.6 oz. (131g)	1.1 oz. (31 g)	5.3 oz. (150g)	4.9 oz. (139g)

1. All range estimations are based on an integrated client adapter antenna associating with an access point under ideal indoor conditions. The distances referenced here are approximations and should be used for estimation only.

Access Point Antennas (Con.)

Feature	AIR-ANT5135D-R	AIR-ANT5145V-R	AIR-ANT5160V-R
Application	Indoor omnidirectional coverage	Indoor medium-range antenna	Indoor medium-range antenna
Gain	3.5 dBi	4.5 dBi	6 dBi
Approximate Range[1]	6 Mbps: 675 ft (206 m) 54 Mbps: 75 ft (21 m)	6 Mbps: 732 ft (223 m) 54 Mbps: 82 ft (25 m)	6 Mbps: 822 ft (251 mm) 54 Mbps: 92 ft (28 m)
Beam Width	360 degrees H 40 degrees E	360 degrees H 50 degrees E	360 degrees H 17 degrees E
Cable Length	N/A	3 ft. (0.91 m)	3 ft. (0.91 m)
Dimensions	5 1/3" x 0.6"	6 3/4" x 4.2"	12" length x 1" diameter
Weight	1 oz	11.5 oz	5.3 oz

1. All range estimations are based on an integrated client adapter antenna associating with an access point under ideal indoor conditions. The distances referenced here are approximations and should be used for estimation only.

Bridge Antennas

Feature	AIR-ANT2506	AIR-ANT24120	AIR-ANT2414S-R	AIR-ANT1949	AIR-ANT3338
Description	Omnidirectional Mast mount	High-gain omnidirectional Mast mount	Vertically polarized sector; -15 dBc, 0 to 30°; Declination lower; side lobe null fill; Mast mount	Yagi mast mount	Solid dish
Application	Outdoor short-range point-to-multipoint applications	Outdoor medium-range point-to-multipoint applications	Outdoor long range point-to-multipoint applications	Outdoor medium-range directional connections	Outdoor long-range directional connections

Feature	AIR-ANT2506	AIR-ANT24120	AIR-ANT2414S-R	AIR-ANT1949	AIR-ANT3338
Approximate Indoor Range[1]	2 Mbps: 3.3 miles (5.31 km)	2 Mbps: 15.81 miles (25.43 km)	2 Mbps: 16.71 miles (26.89 km)	2 Mbps: 18.33 miles (29.49 km)	2 Mbps: 26.49 miles (42.62 km)
	11 Mbps: 1.66 miles (2.66 km)	11 Mbps: 7.92 miles (12.75 km)	11 Mbps: 8.89 miles (14.30 km)	11 Mbps: 11.19 miles (18.01 km)	11 Mbps: 20.1 miles (32.33 km)
	54 Mbps: .21 miles (.34 km)	54 Mbps: 1.0 miles (1.6 km)	54 Mbps: 1.26 miles (2.02 km)	54 Mbps: 1.41 miles (2.27 km)	54 Mbps: 4.46 miles (7.17 km)
Cable Length	3 ft. (0.91m)	1 ft. (0.30m)	5 ft (3 m)	1.5 ft. (0.46m)	2 ft. (0.61m)
Dimensions	Length: 13 in. (33 cm) Diameter: 1 in. (2.5 cm)	Length: 42 in. (103 cm) Diameter: 1.5 in. (3 cm)	Length: 36 in. (91 cm) Width: 6 in. (15 cm)	Length: 18 in. (46 cm) Diameter: 3 in. (7.6 cm)	Diameter 24 in. (61 cm)
Weight	6 oz. (17g)	1.5 lb. (0.68 kg)	6.5 lb. (3 kg)	1.5 lb. (0.68 kg)	11 lb. (5 kg)

1. All range estimations are based on an integrated client adapter antenna associating with an access point under ideal indoor conditions. The distances referenced here are approximations and should be used for estimation only.

Low-Loss/Ultra Low-Loss Antenna Cable

Feature	AIR-CAB020LL-R	AIR-CAB050LL-R	AIR-CAB100ULL-R	AIR-CAB150ULL-R
Cable Length	20 ft. (6m)	50 ft. (15m)	100 ft. (30m)	150 ft. (46m)
Transmission Loss	1.3 dB	3.4 dB	4.4 dB	6.6 dB

Cisco Aironet Accessories

Feature	AIR-ACC2537-060	AIR-ACC3354 AIR-ACC2537-060	AIR-ACC245LA-R AIR-ACC3354
Description	60 in. (152 cm) bulkhead extender	Lightning arrestor 60 in. (152 cm) bulkhead extender	Yagi articulating mount
Application	Flexible antenna cable that extends access point cabling typically within an enclosure	Helps prevent damage due to lightning-induced surges or static electricity; Flexible antenna cable that extends access point cabling typically within an enclosure	Helps prevent damage due to lightning-induced surges or static electricity; Helps prevent damage due to lightning-induced surges or static electricity

Cisco Aironet 1400 Wireless Bridge Antennas (5 GHz)

Feature	AIR-ANT58G9VOA-N	AIR-ANT58G10SSA-N	AIR-ANT58G28SDA-N
Description	Omni-directional Mast mount	Sector antenna Mast mount	Dish antenna Mast mount
Application	Outdoor short-range point-to-multipoint applications	Outdoor medium-range point-to-point and point-to-multipoint applications	Outdoor long-range directional connections
Gain (including supplied jumper cable)	9.0 dBi	9.5 dBi	28.0 dBi
Polarization	Vertical	Vertical or horizontal Field configurable	Vertical or horizontal Field configurable
Elevation adjustment	None	None	+/- 12.5 degrees
Approximate range at 9 Mbps6	8 miles (13 km) (with 22.5 dBi captive antenna on the remote site)	Same as AIR-ANT58G9VOA-N	23 miles (37 km) (with 28 dBi antennas on each end)
Approximate range at 54 Mbps6	2 miles (3 km) (with 22.5 dBi captive antenna on the remote site)	Same as AIR-ANT58G9VOA-N	12 miles (19 km) (with 28 dBi antennas on each end)
Beam width	360 H, 6 V	60 H, 60 V	5.7 H, 6 V
Supplied jumper cable length	4.9 ft. (1.5 m)	Same as AIR-ANT58G9VOA-N	Same as AIR-ANT58G9VOA-N
Dimensions	Length: 18 in. (46 cm) Diameter: 1 in. (2.5 cm)	Length: 2.5 in. (6.4 cm) Width: 2.5 in. (6.4 cm) Depth: 1.75 in. (4.5 cm)	Diameter: 29 in. (74 cm) Depth: 14.5 in. (36.8 cm)
Weight	2.0 lb. (0.9 kg)	1.25 lb. (0.6 kg)	9.5 lb. (4.3 kg)

Cisco Aironet Bridge Accessory

Feature	AIR-ACCRWM1400	AIR-ACCBRGB=	AIR-ACCMFM1400=
Description	Roof/Wall mount kit	Grounding block	Multifunction mount
Application	Allows mounting to flat surfaces Includes full elevation and azimuth adjustment	Helps prevent damage due to lightning-induced surges or static electricity	Allows mounting to poles with a diameter between 1.5 in. and 2.5 in. Includes both elevation and polarization adjustment

Cisco Aironet Power Injector Cables

Feature	AIR-CAB020DRG6-F=	AIR-CAB050DRG6-F=	AIR-CAB100DRG6-F
Cable length	20 ft. (6m)	50 ft. (15m)	100 ft. (30m)

Selected Part Numbers and Ordering Information[1]

Cisco Aironet Accessories

AIR-ACC2662	Yagi Antenna Articulating Mount
AIR-ACC3354	Lightning Arrestor w/ grounding ring
AIR-CAB020LL-R	20 ft. (6m) low-loss antenna cable
AIR-CAB050LL-R	50 ft. (15m) low loss antenna cable
AIR-CAB100ULL-R	100 ft. (30m) low loss antenna cable
AIR-CAB150ULL-R	150 ft. (46m) low loss antenna cable

Cisco Aironet Antennas

AIR-ANT1728	5.2 dBi Omni Ceiling Mount Antenna
AIR-ANT1729	6 dBi Patch Wall Mount Antenna
AIR-ANT1949	13.5 dBi Yagi Mast Mount Antenna
AIR-ANT2012	6.5 dBi Diversity Patch Wall Mount Antenna
AIR-ANT2506	5.2 dBi Omnidirectional Mast Mount Antenna
AIR-ANT3195	3 dBi Patch Wall Mount Antenna
AIR-ANT3213	5.2 dBi Pillar-Mount Diversity Omni Antenna
AIR-ANT3338	21 dBi Solid Dish Antenna
AIR-ANT3351	2.2 dBi POS Diversity Dipole Antenna
AIR-ANT3549	8.5 dBi Hemispherical Patch Antenna
AIR-ANT24120	12 dBi Omnidirectional Mast Mount Antenna
AIR-ANT4941	2.2 dBi Dipole Antenna (Standard Rubber Duck)
AIR-ANT5959	2.0dBi Diversity Omni Ceiling Mount Antenna
AIR-ANT2414S-R	14dBi Sector Mast Mount Antenna
AIR-ANT5135	3.5 dBi dipole antenna
AIR-ANT5145	4.5 dBi omni
AIR-ANT5160	6 dBi omni

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the *Distribution Product Reference Guide* at: http://www.cisco.com/dprg (limited country availability).

For More Information

See the Aironet Antennas & Accessories Web site **http://www.cisco.com/go/antenna**

Voice and IP Communications

Voice and IP Communications at a Glance

Product	Features	Page
Cisco CallManager 4.1	• The software-based call processing and call control component of Cisco's IP Telephony solution • Resides on Cisco Media Convergence Servers (MCS), or selected third-party servers (CallManager 4.1)	4-3
Cisco Unity—Unified Messaging and Voice Mail	Voicemail and unified messaging system delivers all messages into single inbox for access via phone, email or Internet	4-7
Cisco CallManager Express	• IOS ® -based call control - supported on standard Cisco multiservice routers (1751,1760,2600XM,3600,3700, and IAD 2400 series) • Configurable Key-system or Hybrid-PBX feature set for up to 100 users • Intuitive GUI for system administration and administration • Supports all Cisco standard IP phones	4-9
Cisco Unity Express	• Integrated voice mail and automated attendant services locally delivered for either Cisco CallManager or Cisco CallManager Express solution • Leverages the data infrastructure; supported on broad range of Cisco access routers and new Cisco Integrated Services Routers • Increases employee productivity and customer service for businesses of various sizes and operational models	4-10
Cisco Emergency Responder	• Works with Cisco CallManager to automatically provide E9-1-1 features in North America, and is compatible with any emergency number including 112 in Europe, 999 in UK, and 000 in Australia. • Dynamically tracks the location of IP phones, routes emergency calls to the appropriate E9-1-1 network, and provides the current location information to E9-1-1 call center dispatchers. • Provides real-time alert notifications to on-site or contracted security groups, to facilitate a timely response to emergency situations.	4-11
Cisco IP Contact Center (IPCC) Enterprise Edition	Delivers intelligent call routing, network-to-desktop CTI, and multi-channel contact management to contact center agents over an IP infrastructure. • Pre-routing and post-routing of contacts • Ability to handle voice, Web and e-mail contacts, as well as inbound and outbound campaigns • Computer telephony integration, universal queue, IVR integration and remote agent support • Complete supervisory, administration and reporting for the contact center	4-12
Cisco IPCC Hosted Edition	Offers full IP-based contact center services from its network. The only required customer premises equipment (CPE) are Cisco IP Phones, agent PCs, and a Cisco AVVID network enabled for quality of service (QoS).	4-13
Cisco IP Contact Center Express Edition	• A software-based ACD, IVR, and CTI application for departmental, enterprise branch, or small to mid-sized contact centers with Cisco IP Telephony networks based on Cisco AVVID. • Provided in Standard, Enhanced and Premium versions • Offers an open systems platform allowing ease of installation and configuration • Provides a graphically driven workflow editor providing a common interface for creating interactions, or call flows, and creates business logic between IVR and ACD functions	4-14
Cisco IP IVR	Provides a feature-rich foundation for the creation of an IP-based interactive voice response (IVR) system that is open and expandable. • Provides an IP-empowered application-generation environment for self service and call treatment solutions • Offers Web-based activation and administration • HTML, XML, ODBC, JDBC integrations supported • Offers optional Automatic Speech Recognition and Text to Speech • Extendable through custom Java steps	4-15
Cisco Customer Voice Portal	Offers a Web-based prompt, collect, queuing, and call control service, using standard Internet technologies • Offers a Web-based, self-service IVR option enabling customers to; pay a bill, order products and track delivery, locate a dealer, schedule a pickup, change name and address information, make travel arrangements, check payment status, receive notification of unusual activity, or request literature or product information • Supports automatic speech recognition (ASR) and text to speech (TTS) • Integrates fully with both traditional TDM and IP-based contact centers	4-16

Product	Features	Page
Cisco ICM Enterprise Edition	Enables interaction with a contact center via phone, Web, voice over IP (VoIP), text chat, or e-mail. • Provides centralized management control over customer contacts • Cisco Pre-Routing and Post-Routing; Customer Profile Routing • Computer telephony integration, Web collaboration, E-mail management, IVR integration • Inbound and outbound campaign management • Enterprise reporting • Distributed fault tolerance • Multi-carrier, multi-vendor capabilities	4-16
Cisco Personal Assistant	Software application allows users to browse voicemail, dial by name, and conference from any phone using voice commands instead of telephone keypad via speech recognition	4-18
CiscoWorks Manager IP Telephony Environment Monitor	A suite of management applications that helps ensure the readiness and manageability of converged networks that are supporting VoIP and IP telephony traffic and applications. The bundle includes: Voice Health Monitor; Default Fault Manager; CiscoView • CCO Downloadable Modules: IP Phone Information Utility; IP Phone Help Desk Utility; Fault History Manager	9-17
Cisco IP Communicator	• Softphone client that gives computers the capabilities and features of a Cisco IP phone • A supplemental telephone that provides access to phone extensions and services outside the office • Unified administration with Cisco IP phones and automatic software updates makes it easy to manage	4-17
Cisco VT Advantage	• Brings video telephony functionality to Cisco IP phones • Adds video to phone calls through the use of a personal computer without button-pushing or mouse-clicking • Video telephony is now just a phone call	4-18
Cisco Survivable Remote Site Telephony Software (SRST)	• IOS software that runs on local branch office router provides IP Telephony backup redundancy for IP phones in that office when IP phones detect that WAN is down or/and CallManager is unreachable	4-20
Cisco Conference Connection (CCC)	• Enables enterprises to bring geographically dispersed employees and customers together to facilitate meetings and collaboration. • Provides a cost-effective and time-efficient method of doing business without the hassle of travel.	4-21
Cisco IP Phones IP 7900 Series	An exciting, distinctively stylish, and pure Voice over IP phone portfolio to meet the wide range of business communication needs at affordable prices • Display-based technology provides ease-of-use • Integrated inline power and 2-port Ethernet Switch provides end-to-end infrastructure integration • Rich application environment enabled by open APIs based on XML	4-21
Cisco ATA Series of Analog Telephone Adaptors	Turns any analog telephone into an IP telephone. Each of the two voice ports supports independent telephone numbers, providing two separate lines. • Interoperable with multiple standards including H.323, SIP, MGCP and SCCP • Enables analog devices, such as phones and fax machines, to support Voice over IP services by converting the analog signal into an IP signal	4-23
Cisco MCS 7800 Series Media Convergence Servers	High availability server platform for Cisco IP telephony systems • Turnkey solution, includes CallManager and other software • For large- and medium-sized enterprise IP telephony deployments	4-24
Cisco Voice Gateways[1]	The Cisco VG248 dedicated voice gateway provides connectivity between IP networks and legacy telephony systems/PSTN • VG248 supports up to 48 Foreign eXchange Station (FXS) ports for connecting analog telephones. • Fully manageable by Cisco CallManager, a CLI interface via Telnet, or via SNMP	4-26
Cisco MeetingPlace	• Integrated voice, video and web conferencing • On-network conferencing solution that integrates directly into an organization's private voice and data networks • Cost-effective and secure with a superior user experience	4-27
Cisco IP/VC 3500 Series Videoconferencing Products	• Videoconferencing over IP solution • Cost-effective, easy-to-manage • Translates between H.323 and H.320 systems • Management and Quality of Service	4-28
Cisco IP/TV 3400 Series Video Servers	• High-quality video communications over enterprise networks • Support live and scheduled video broadcasts, recording of live broadcasts and video on demand • MPEG-1, MPEG-2, and ISMA MPEG-4 support • Enables e-training, corporate communications, business TV, and distance learning	4-29
Cisco Voice Bundles[2]	Cisco 1760, 2600, 2800, 3700, and 3800 Voice Bundles for handling toll bypass applications or PSTN/PBX to IP Connectivity for Cisco CallManager deployments.	4-30
Cisco CallManager Express Bundles [2]	Cisco 1760, 2600, 2800, 3700, and 3800 Cisco CallManager Express Bundles for customers wanting a complete all in one router IP Telephony Solution for the Small Office or Enterprise Branch location.	4-30

Product	Features	Page
Cisco Survivable Remote Site (SRST) Bundles[2]	Cisco 1760, 2600, 2800, 3700, and 3800 Voice Bundles for customers' branch locations where they need data connectivity plus local PSTN call handling with a centralized Cisco CallManager deployment.	4-31
Cisco V3PN Bundles[2]	Cisco 1760, 2800 and 3800 Voice Bundles for remote branch locations needing VPN and IP Telephony using Cisco CallManager Express or SRST with centralized Cisco CallManager Express deployment.	4-32

1. Cisco's full line of multiservice routers also provide analog and digital voice gateway functionality through use of network modules and voice interface cards. Please see the 1700, 2600XM, 3600, 7200, 5x00 series in Chapter 1—Routers, as well as Chapter 7—Access Products.

2. Bundles provide a discount compare to ordering the parts individually. With each bundle, the customer needs to choose the country explicit PSTN module required plus any additional features or modules for the applications.

Cisco CallManager 4.1

Cisco CallManager Version 4.1 provides a scalable, distributable, and highly available enterprise IP telephony call-processing solution. The enhancements provided by Cisco CallManager Version 4.1 offer improved security, interoperability, capability, supportability, and productivity as well enhancements to video telephony introduced in Cisco CallManager 4.0.

Multiple Cisco CallManager servers are clustered and managed as a single entity. Clustering multiple call-processing servers on an IP network is a unique capability in the industry, and highlights the leading architecture provided by Cisco AVVID. Cisco CallManager clustering yields scalability of from 1 to 30,000 IP phones per cluster, load balancing, and call-processing service redundancy. By interlinking multiple clusters, system capacity can be increased up to one million users in a 100+ site system. Clustering aggregates the power of multiple, distributed Cisco CallManagers, enhancing the scalability and accessibility of the servers to phones, gateways, and applications. Triple call-processing server redundancy improves overall system availability.

The benefit of this distributed architecture is improved system availability, load balancing, and scalability. Call Admission Control (CAC) helps ensure that voice quality of service (QoS) is maintained across constricted WAN links, and automatically diverts calls to alternate public switched telephone network (PSTN) routes when WAN bandwidth is not available. A Web interface to the configuration database enables remote device and system configuration. HTML-based online help is available for users and administrators.

Cisco CallManager 4.1 has the ability to verify identity of the devices or servers that they communicate with, ensure the integrity of data they are receiving, and provide privacy of communications via encryption. The devices that can participate in secure communications now includes the Cisco IP Phone 7940G, IP Phone 7960G, IP Phone 7970G, and Media Gateway Control Protocol (MGCP) gateways. Secure administration and troubleshooting is now capable with CallManager 4.1 using HTTPS.

Enhancements to the CallManager APIs (AXL, JTAPI, TSP) provide customers and 3rd party vendors increased ability to develop improved applications that can be integrated with CallManager and IP Phones.

Key Features

- Supplementary and enhanced services such as hold, transfer, forward, conference, multiple line appearances, automatic route selection, speed dial, last-number redial, and other features are extended to IP phones and gateways
- Capabilities enhancements are achieved though software upgradeability, avoiding expensive hardware costs traditional to legacy PBX systems

- Cisco CallManager Attendant Console—This Web-enabled application supports the traditional role of a manual attendant console and allows the attendant to quickly accept and dispatch calls to enterprise users. An integrated directory service provides traditional busy lamp field (BLF) and direct station select (DSS) functions for any line in the system. It monitors the state of every line in the system without requiring hardware-based line monitoring devices, thereby saving costs

- Software-only applications such as the Cisco Interactive Voice Response system, Cisco IP Contact Center, Cisco Automated Attendant, and Cisco SoftPhone are applications that interact with the CallManager through telephony APIs

- Video telephony gives users the ability to place video calls using the same user model as a voice call; Traditional telephony features available for video calls such as hold, resume, park, transfer, conference; Provides a common dial plan and administration between voice and video

- Comprehensive and wide range of security features; Encryption and Authentication are available across the most widely used Cisco IP phones and gateways; Secure CallManager system and user administration

- New call coverage/call routing features allow calls to be routed based on time of day, source of call and destination of call to handle the complex routing requirements of many of our customers

- By supporting a wide set of Q.SIG features, installable along with a TDM based PBX to allow peaceful co-existance and migration to an all IP environment while delivering some of the key features needed between the TDM PBX and CallManager; Path replacement and call completion allow Cisco CallManager to integrate with other Q.SIG compatible systems; H.323 Annex M.1 support now gives users improved feature transparency between CallManager clusters

- Easily configure a Cisco Unity voice mail box while configuring an IP phone for that user using Cisco Unity User Integration

Specifications

Feature	Cisco CallManager 4.1[1]
Platforms	Media Convergence Server (MCS)
	Selected third-party servers
Pre-Installed Software	Auto attendant
	Bulk Administration Tool (BAT)
	CDR Analysis and Reporting (CAR) tool
	Cisco Attendant Console
	Cisco CallManager Administration software
	Cisco CallManager version 4.1 (call processing and call-control application)
	Cisco CallManager version 4.1 configuration database (contains system and device configuration information, including dial plan)
	Cisco Conference Bridge
	Cisco Customer Directory Configuration Plugin
	Cisco Dialed Number Analyzer—Serviceability tool that analyzes the dialing plan for specific numbers.
	Cisco IP Manager Assistant (IPMA)
	Cisco IP Phone Address Book Synchronizer
	Cisco IP Telephony Locale Installer
	Cisco JTAPI
	Cisco TAPS
	Cisco Telephony Service Provider
	Real Time Monitoring Tool RTMT

Feature	Cisco CallManager 4.1[1]
Sample Subset of System Capabilities	Anti-Virus checker certification
	Cisco Intrusion Detection System (IDS) Host-Based Sensor certification
	Cisco Security Agent (CSA) bundled with CallManager.
	Data integrity with TLS cipher "NULL-SHA"
	Device Authentication with X. 509v3 certificates.
	Distributed Call Processing
	Encryption of signaling and media on many Cisco IP endpoints and gateways.
	Forced Authorization Codes/Client Matter Codes
	H.323 FastStart
	H.323 scalability improvements - 1,000 H.323 calls per CallManager server in cluster
	H.323 T.38 fax support
	Multi-level Precedence and Pre-emption (MLPP)
	Secure HTTP (HTTPS) support
	Session Initiation Protocol (SIP) trunk
	Survivable Remote Site Telephony (SRST)
Summary of Administrative Features	Application discovery and registration to SNMP manager
	Automated Alternate Routing Groups
	AXL SOAP API with performance and real-time informationBulk Administration
	Call Back
	Call Detail Records (CDR)
	Call forward reason code delivery
	Centralized, replicated configuration database, distributed Web-based management viewers
	Configurable and default ringer WAV files per phone
	Configuration database API
	Database automated change notification
	Date/time display format configurable per phone
	Debug information to common syslog file
	Device addition through wizards
	Device downloadable feature upgrades—Phones, hardware transcoder resource, hardware conference bridge resource, VoIP gateway resource
	Device groups and pools for large system management
	Device mapping tool-IP address to MAC address
	Dialed Number Identification Service (DNIS)
	Dialed number translation table (inbound/outbound translation)
	Distinctive ring per line
	Dynamic Host Configuration Protocol (DHCP) block IP assignment-phones and gateways
	Enhanced 911 service
	H.323-compliant interface to H.323 clients, gateways, and gatekeepers
	Individual line Call Waiting Alert Configuration
	Integration with Unity Voicemail
	JTAPI 1.2 computer telephony interface
	LDAP version 3 directory interface to selected vendor's LDAP directories
	• Active Directory
	• Netscape Directory Server
	Manager Assistant
	Mappable softkeys
	MGCP signaling and control to selected Cisco VoIP gateways
	Multilevel Administration Access (MLA)
	Native supplementary services support to Cisco H.323 gateways
	Network Specific Facilities Paperless phone DNIS-display driven button labels on phones
	Performance Monitor
	Performance monitoring SNMP statistics from applications to SNMP manager or to operating system
	Q.SIG Support
	QoS statistics recorded per call
	Redirected DNIS (RDNIS), inbound, outbound (to H.323 devices)
	Select specified line appearance to ring; Select specified phone to ring
	Single CDR per cluster
	Single point system/device configuration
	Sortable component inventory list by device, user, or line
	System event reporting-to common syslog or operating system event viewer
	TAPI 2.1 computer telephony interface
	Time-zone configurable per phone
	Toll Fraud preventation
	Video telephony
	XML API into IP phones (794X/6X)
	Zero cost automated phone moves; Zero cost phone adds

Feature	Cisco CallManager 4.1[1]
Summary of User Features	Abbreviated Dialing or speed dials
	Answer/answer release
	Auto-answer/intercom
	Barge
	Call back
	Call connection
	Call coverage
	Call forward-all (off-net/on-net); Call forward-busy; Call forward-no answer
	Call hold/retrieve
	Call Join
	Call park/pickup; Call pickup group-universal
	Call status per line (state, duration, number)
	Call waiting/retrieve
	Calling Line Identification (CLID); Calling party name identification (CNID)
	Calling Line Identification Restriction (CLIR)
	Direct inward dial (DID; Direct outward dial (DOD)
	Direct Transfer
	Directories-missed, placed, received calls list stored on selected IP phones
	Directory dial from phone-corporate, 2personal
	Distinctive ring (on-net vs. off-net); Distinctive ring per phone
	Drop last conference party (ad-hoc conferences)
	Extension Mobility
	Extension mobility support
	H.264 video Codec support
	Hands-free, full-duplex speakerphone
	HTML help access from phone
	Immediate Divert to voicemail
	Last number redial (off-net/on-net)
	List and drop conference participate
	Manager-assistant service (IPMA application)
	Message waiting indication
	Multiparty conference-Ad-hoc with add-on, Meet-me
	Multiple line appearances per phone
	Music-on-hold
	Mute capability from speakerphone and handset
	On-hook dialing
	Operator attendant-Web-browser interface, loop key notification, logon/logoff, busy/available, left/right hand access, headphone access, busy lamp field, direct station select, drag and drop transfer, call status (state, duration, and number)
	Privacy
	Real-time QoS statistics through http browse to phone
	Recent dial list-calls to phone, calls from phone, auto-dial, and edit dial
	Service URL—Single button access to IP phone service
	Single button data collaboration on SoftPhone-chat, whiteboard, and app sharing
	Single directory number, multiple phones-bridged line appearances
	Speed dial-multiple speed dials per phone
	Station volume controls (audio, ringer)
	Transfer-with consultation hold
	User-configured speed dial and call forward through Web access
	Video support for continuous presence
	Video support of H.323 endpoints, gateways, and MCUs
	Video Telephony
	VT Advantage with mid call invocation.
	Web services access from phone
	Wideband audio codec support—proprietary 16-bit resolution, 16 kHz sampling rate codec

1. Additional RAM may be required in Media Convergence Servers to support existing and enhanced services in Cisco CallManager 4.1

For More Information

See the Cisco CallManager Web sites: **http://www.cisco.com/go/callmgr**

Cisco Unity—Unified Messaging and Voice Mail

Cisco Unity is a powerful Unified Communications server that provides advanced, convergence-based communication services and integrates them with the desktop applications business professionals use everyday, improving customer service and productivity. Designed for enterprise-scale organizations, Cisco Unity delivers unified messaging that gives subscribers the ability to access and manage messages and calls from anywhere, at any time, regardless of device or media type. Subscribers can listen to e-mail over the telephone, check voice messages from the Internet, and if a fax server is present, forward faxes to any local fax machine. Cisco Unity voice messaging features robust automated attendant functionality that includes intelligent routing, and easily customizable call screening and message notification options. Cisco Unity supports localized versions in multiple languages and supports multiple languages on a single system.

Cisco Unity's optional digital networking module enables connectivity to other Cisco Unity servers at the same site via the LAN or remotely via WAN. Digital networking gives users the ability to send subscriber-to-subscriber messages anywhere in the world.

Cisco Unity supports both Cisco CallManager and leading legacy telephone systems—even simultaneously—to help smooth the transition to IP telephony and protect existing infrastructure investments. Built on a scalable platform, it uses streaming media and an intuitive HTML browser-style system administration interface. Costs are minimized when Cisco Unity's server architecture is truly unified with an organization's data network.

Key Features

- Architecture allows IT staff to set one back-up procedure, one message storage policy, and one security policy
- Enhanced scalability allows up to 72 ports per server; up to 7,500 subscribers per server; or a total of 250,000 users in an Exchange environment or 100,000 users in a Domino environment up
- Support for Exchange 2000/Active Directory as the single message store and directory; AMIS-A and VPIM interoperability for Exchange systems.
- Enhanced networking for large deployments
- Support for multiple CCM clusters; ability to light Message Waiting Indicators
- With Exchange/Domino off-line, utilizes pre-MTA queue to take messages and give basic message access; Support for Lotus Domino as the single message store
- Fault-tolerant system tools—robust security, file replication, and event logging
- Scalable, high-availability hardware platforms—Server options with multiple processors, redundant fans, redundant power supplies and RAID hard disk drives
- Support for Windows 2000 in a mixed/native mode
- Unity Inbox/VMI (Visual Messaging Interface) is an Internet Explorer-based voice mail inbox providing unified messaging
- Unity Bridge provides advanced message interchange functionality with legacy Avaya/Octel voice mail systems—unlocking proprietary networking to deliver open standards-based IP migration

Specifications

Feature	Cisco Unity 4.0
Unity Voice Mail (VM) and Unified Messaging (UM) Possible Configurations	16, 32 and Max sessions Configured for CallManager or configured for legacy PBX/dual integration[1]
Options	Voice Mail; Voice Mail with Multi-lingual option; Unified Messaging with Text-to-Speech (TTS) option Unified Messaging with Multi-lingual option; Exchange or Domino; AMIS for Exchange; VPIM for Exchange; Unity Inbox/Visual Messaging Interface; Failover for Exchange; Unity Bridge for Exchange

1. Contact your Cisco Software Sales Representative for integration information.

Selected Part Numbers and Ordering Information[1]

Cisco Unity Servers

MCS-7815-I1-ECS1	MCS 7815 tower; Unity and Unity Bridge; 1GB; Win2K
MCS-7825-I1-ECS1	MCS 7825-IBM rack; 1GB RAM; sATA RAID; Win2K
MCS-7825-H1-ECS1	MCS 7825-HP rack; 1GB RAM; sATA RAID; Win2K
MCS-7835-I1-ECS1	MCS 7835-IBM; rack; 2GB; RAID 1; Win2K
MCS-7835-H1-ECS1	MCS 7835-HP; rack; 2GB; RAID 1; Win2K
MCS-7845-I1-ECS1	MCS 7845-IBM; VM-6HDD; rack; 4GB; RAID 1(x3) DUAL CPU; Win2K
MCS-7845-I1-ECS2	MCS 7845-IBM; UM-4HDD; rack; 4GB; RAID 1(x2) DUAL CPU; Win2K
MCS-7845-H1-ECS1	MCS 7845-HP; VM-6HDD; rack; 4GB; RAID 1(x3) DUAL CPU; Win2K
MCS-7845-H1-ECS2	MCS 7845-HP; UM-4HDD; rack; 4GB; RAID 1(x2) DUAL CPU; Win2K
UNITY-MCS-ML-DAT=	Hot-Swap tape drive for MCS-7835H and MCS-7845H
DAT-7835-I1	Hot swap IBM DAT tape drive for MCS-7835-I1
DAT-7845-I1	Hot swap IBM DAT tape drive for MCS-7845-I1
MCS-EXT-DAT	External DAT tape drive for MCS servers
MCS-EXT-SDLT	External SDLT drive for MCS servers
MCS-EXT-SCSI	SCSI card option for external DAT drive
UNITY-EXP-CHAS=	Expansion chassis

Cisco Unity 4.0 Unified Messaging and Voicemail Software

UNITYU4-50USR-E=	Unity UM Exchange, 50 users, 16 session, 2 TTS
UNITYU4-100USR-E=	Unity UM Exchange, 100 users, 16 session, 2 TTS
UNITYU4-200USR-E=	Unity UM Exchange, 200 users, 16 session, 2 TTS
UNITYU4-300USR-E=	Unity UM Exchange, 300 users, 16 session, 2 TTS
UNITYV4-50USR=	Unity VM, 50 users, 16 sessions
UNITYV4-100USR=	Unity VM, 100 users, 16 sessions
UNITYV4-200USR=	Unity VM, 200 users, 16 sessions
UNITYV4-300USR=	Unity VM, 300 users, 16 sessions
UNITY-DVD-4.0=	UNITY 4.0 DVD set
UNITY-CD-4.0=	UNITY 4.0 CD set

Cisco Unity Integrations

UNITY-D/41U-LS	D/41 Universal PCI - US/CANADA
UNITY-D/41U-EU	D/41 Universal PCI - Europe, Aus, NZ
UNITY-D/120U-LS	D/120JCT Universal PCI rev 2 - US/CANADA
UNITY-D/120U-EU	D/120JCT Universal PCI Euro - Europe, Aus, NZ
UNITY-PBXLINK-1	PBXLink, 4-24 ports for Lucent; 4-20 ports for Nortel
UNITY-PBXLINK-2	PBXLink, 4-40 ports for Lucent; 4-48 ports for Nortel
UNITY-PIMG-DIG	PBX IP Media gateway for digital integrations
UNITY-RLM-GW-2.4	Rolm GW for Unity Integration with Rolm PBX

Cisco Unity Options

UNITY-AMIS	Unity, AMIS-A networking
UNITY-ADDL-LANG	Support for an additional language. May order up to 17.
UNITY-RS-ML	Unity, one session Real Speak TTS
UNITY-VPIM	Unity, VPIM - Per Server

Cisco Unity Bridge

UNITY-BRIDGE-3.0	Unity Bridge 3.0, requires Unity 4.0.3 or later
UNITY-BRIDGE-2.1	Unity Bridge 2.1, requires Unity 4.0.2 or earlier

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco Unity site: **http://www.cisco.com/go/unity**

Cisco CallManager Express

Cisco CallManager Express is a solution embedded in Cisco IOS Software that provides call processing for Cisco IP phones. This solution enables the large portfolio of Cisco multiservice access routers to deliver features similar to those of a key system or low-end private branch exchange (PBX), thereby enabling deployment of a cost-effective, highly reliable, IP Communications solution for the small office. Customers can now scale IP telephony to a small site or branch office with a solution that is very simple to deploy, administer, and maintain. The Cisco CallManager Express solution provides customers with a low-cost, reliable, feature-rich solution for a deployment of up to 100 users.

Key Features

- Cost-effective operations through a single, integrated voice-and-data platform for all branch office needs
- Provides integrated IP telephony services for multiservice access routers that allows customers to deploy one device in their office to address all their business needs, simplifying management, maintenance, and operations, and delivering a lower total cost of ownership (TCO)
- Robust set of key system and low-end PBX capabilities—Delivers a robust set of telephony features for the small office, and delivers unique value-added capabilities through Extensible Markup Language (XML) that enhance the productivity of the end user and of the business, and that cannot be delivered by traditional solutions
- Investment protection and ease of upgrade to centralized call-processing solutions—Simple software or firmware upgrade capabilities
- Remote maintenance and troubleshooting using Cisco IOS Software command-line interface (CLI) or Web-based GUI—Acts as a standalone call-processing engine for IP phones located in the branch office

Specifications

Feature	Cisco IP Manager Assistant
Platform	Cisco IAD2400, 1751, 1760, 2600XM, 2691, 3640, 3640A, 3660, and 3700 Series Multi-Service Routers.
Phones supported	Cisco 7960 7940, 7935, 7912, 7905, 7902, 7910, ATA
IOS Images	Cisco Call Manager Express 3.1 supported in 12.2(15)ZJ3

For More Information

See the Cisco CallManager Express Web site:
http://www.cisco.com/en/US/products/sw/voicesw/ps4625/index.html

Cisco Unity Express

Cisco ® Unity Express provides voice mail and automated attendant services specifically for the small and medium office or branch. It's application is delivered on either a network module or advanced integration module which are supported on a variety of Cisco access router platforms and the Cisco Integrated Services Router family.

In a Cisco CallManager environment, Cisco Unity Express provides local storage and processing of voice mail and automated attendant services for the branch office, thereby alleviating WAN bandwidth and Quality of Service concerns. Cisco CallManager Express and Unity Express combine to create the Cisco IP Communications Express solution which provides voice, data, and telephony management services integrated on a single, router-based platform. Both solutions offers a core set of phone, voice mail and automated attendant features to meet everyday business needs, while providing the rich telephony feature sets that customers have grown to expect.

Key Features

- Cost-effective operations through a single, integrated voice-and-data platform for all small and medium office or branch needs
- Boosts the professionalism, productivity and customer service available to the small and medium office through built-in automated attendant and voice mail capabilities; Customizable automated attendant to support business hours, day-of-week treatment and multi-level, nested automated attendant menus with up to 5 separate automated attendants per system
- Both standard and advanced voice mail features such as remote message access, save and delete, forward, pause, fast forward or rewind messages, alternate greetings, zero-out to designated alternate phone number or extension, per user storage allocation, plus much, much more
- Support for VPIMv2 for voice mail message exchange with other Cisco Unity or Unity Express systems.
- Remote maintenance and troubleshooting using Cisco command-line interface (CLI) or Web-based GUI

Specifications

Feature	Cisco CallManager Express
Hardware	NM-CUE or AIM-CUE, fully self-contained modules with onboard storage, memory and processing supporting a variety of mailbox densities, storage capacities and concurrent sessions to meet the needs of every small and medium office or branch
Software	Cisco Unity Express release 1.1.2and Cisco IOS 12.3.4T for NM-CUE, Cisco IOS 12.3.8T for the AIM-CUE
Platform Supported	Cisco 2600XM, 2691,3700 Series Multi-Service Routers and Cisco 2800, 3800 Integrated Services Routers

For More Information

See the Cisco Unity Express Web site: **http://www.cisco.com/go/ccmecue**

Cisco Emergency Responder

Cisco Emergency Responder revolutionizes enterprise telephony support for E9-1-1 in North America, E1-1-2 in Europe, and other emergency telephone services across the globe. Traditional PBX E9-1-1 implementations in North America support "automatic location identification" of emergency callers through daily manual database update processes, which limit the frequency of location updates and increase the likelihood of update errors. The Cisco Emergency Responder software application works with Cisco CallManager to automatically track the location of Cisco IP phones in enterprise campuses, route emergency calls to an appropriate public safety answering point (PSAP), and provide the location of the caller to the Public Safety Answering Point (PSAP).

Cisco ER performs these functions without requiring tedious manual database updates after phone moves/adds/changes, which significantly reduces the time, headcount, and costs associated with traditional PBX E9-1-1 maintenance. While some vendors may automate location updates, they still require manual PBX configuration changes to trigger the updates. The Cisco ER solution, when coupled with the automated phone moves/adds/changes features in Cisco CallManager, is the first in the industry to completely automates the phone move process while maintaining E9-1-1 and location data integrity.

In addition, Cisco ER can use email/pager messaging, telephone calls, and auto-refreshing webpage updates to notify on-site security operations personnel and third-party agencies of emergency calls in progress.

Key Features

- Meets and exceeds traditional E9-1-1 requirements
- Automates all user and phone moves, adds, and changes; Enables users and phones to move an unlimited number of times per day
- Avoids the expense and burden of daily PS-ALI record uploads
- Avoids daily error-prone documentation and database updates
- Enables quicker and more effective emergency response from onsite personnel and public agencies
- Provides configuration auditing to facilitate responsible change management and investigative or legal processes
- Provides call history logs for capacity planning, management of emergency call abuse, and incident documentation
- Compatible with any emergency number

Specifications

Feature	Cisco Emergency Responder
Supported Platform	Cisco Media Convergence Server MCS-7815I-3.0-IPC1, MCS-7825H-3.0-IPC1, MCS-7825I-3.0-IPC1, MCS-7835H-3.0-IPC1, MCS-7835I-3.0-IPC1, MCS-7845H-3.0-IPC1
System Capacity	A single Cisco Emergency Responder server can (depending on server platform) support 30,000 phones, 120,000 Ethernet switch ports and 10,000 manually entered endpoints such as analog or proprietary phones or H.323 clients. Cisco recommends a second Emergency Responder server to form a fully redundant Cisco Emergency Responder Group with the same capacity and increased availability compared with a single Cisco Emergency Responder server. Larger campuses and distributed systems are supported via a network of Cisco Emergency Responder groups called a Cisco Emergency Responder Cluster.
Configurable Elements	
Cisco CallManager	Call routing and digit manipulation to forward user-initiated emergency calls and PSAP return calls to and from Cisco Emergency Responder as appropriate
Cisco Emergency Responder	System administration interface-for access to all configuration components or oversight of outsourced vendors
	LAN administration interface-for IT LAN group or an outsourced vendor
	Emergency Response Location (ERL) administration interface-for IT telecom group or an outsourced vendor

Feature	Cisco Emergency Responder
Other Components	Configure e-mail account on a Simple Mail Transfer Protocol (SMTP) Internet mail server for use by Cisco Emergency Responder
	Configure an email-to-pager gateway, or use an email paging service
	Configure a PS-ALI transfer application provided by the PS-ALI database service provider (often requires a dialup modem connection)
	Provision an E9-1-1 capable voice trunk (Centralized Automated Message Accounting [CAMA] or Primary Rate Interface [PRI]) through a local exchange carrier
Supported Switches[1]	Cisco Catalyst 2900 XL, 2950, 3500 XL, 3550, 3560, 3750, 4000, 4500, 5000, 5500, 6000, and 6500 Series switches. Cisco 3700 and 3800 series routers. (See the latest Release Notes for specific devices supported within each series.)

1. Check for updates on CCO, and following is list of tested switch platforms at time of printing

Selected Part Numbers and Ordering Information[1]

Cisco Emergency Responder

SW-CER1.2-SVR=	Cisco Emergency Responder software (MCS platforms) on CD, including 100 user licenses
KEY-CER1.2-100=	CER 1.2 user license for 100 phones
KEY-CER1.2-500=	CER 1.2 user license for 500 phones
KEY-CER1.2-1K=	CER 1.2 user license for 1,000 phones
KEY-CER1.2-5K=	CER 1.2 user license for 5,000 phones

1. Redundant user licenses are not required when ordering redundant CER servers for a single CER group.

For More Information

See the Cisco Emergency Responder Web site: **http://www.cisco.com/go/cer**

Cisco IP Contact Center (IPCC) Enterprise Edition

Cisco IP Contact Center (IPCC) Enterprise Edition delivers intelligent contact routing, call treatment, network-to-desktop computer telephony integration (CTI), and multi-channel contact management over an IP infrastructure. By combining multi-channel automatic call distributor (ACD) functionality with IP telephony in a unified solution, it enables companies to rapidly deploy a distributed contact center infrastructure.

Cisco IPCC Enterprise Edition segments customers, monitors resource availability, and delivers each contact to the most appropriate resource anywhere in the enterprise. The software profiles each customer using contact-related data such as dialed number and calling line ID, caller-entered digits, data submitted on a Web form, and information obtained from a customer profile database lookup. At the same time, the system knows which resources are available to meet the customer's needs based on real-time conditions (agent skills and availability, interactive voice response (IVR) status, queue lengths, and so on) continuously gathered from various contact center components.

It provides a state of the art VoIP contact center solution that allows seamless integration of inbound and outbound voice applications with Internet applications including real-time chat, Web collaboration and e-mail. This integration allows for unified capabilities, enabling a single agent to support multiple interactions simultaneously regardless of the communications channel the customer has chosen. Since each interaction is unique and may require individualized service, Cisco provides contact center solutions to manage each interaction based on virtually any contact attribute. Furthermore, Cisco can bridge the gap between TDM and IP infrastructures, providing a seamless integration of voice, chat, e-mail, and Web collaboration applications over both of these technology platforms.

Key Features

- Full Scalability from less than a hundred to thousands of seats
- Multi-channel interaction—Web collaboration with chat and callback, email, voice mail and fax routing
- Multi-site Contact Centers support; CRM Integration
- Cradle-to-grave contact call detail records
- Common agent and supervisor desktops across all Cisco customer interaction management products
- Pre-defined and custom historical reports; Real-time reports integrated in the agent and supervisor desktops
- Support for custom call treatment for calls in queue includes support for music in queue and custom messaging; Standard screen pop allows any caller-entered information to be popped to the agent
- Support for agent/supervisor interaction via chat; pre-define agent-supervisor messages

Selected Part Numbers and Ordering Information[1]

Cisco IP Contact Center

IPCE-Bundle	Requires the purchase of one IPCC Server license. This license entitles the user to deploy the following necessary components: (redundant) Router; (redundant) Logger; (redundant) CallManager Peripheral Gateway(s); (redundant) IVR Peripheral Gateway(s) for connection to Cisco IVR systems ISN and IP-IVR (Non-Cisco IVRs require Third part IVR port licenses); Administrative Workstation(s); Historical Database server(s); WebView server and WebView user connections; Internet Script Editor (ISE) server and ISE user connections; Application Gateways; (redundant) CTI Server for 3rd party CTI connections (only for non-agent desktop application)
IPCE-SVR	IPCC ENTERPRISE SERVER LICENSE

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco IPCC Enterprise Edition Web site: **http://www.cisco.com/go/ipcc**

Cisco IPCC Hosted Edition

The Cisco IPCC Hosted Edition is suitable for both enterprise customers and service providers. For service providers, the IPCC Hosted Edition creates a new, high-margin service revenue stream for incumbent providers as well as new service carriers. The service provider hosts the contact center infrastructure software-which is shared by multiple business customers-in its central office or data center. Subscribing business customers can have IP infrastructures, TDM infrastructures, or a combination of the two. For the enterprise customer with multiple branch offices or divisions the value is a centralized contact center infrastructure with the ability to offer services to its various divisions or satellite offices. The solution includes a suite of integrated services that can be introduced all at once or incrementally.

Key Features

- Virtual call center—Calls are routed to contact center agents independent of their location, a service especially appealing to businesses with branch offices or home agents
- Network routing with computer telephony integration-Network-based ACD is combined with computer telephony integration (CTI) services
- Network IVR—IVR functionality is located in the network to provide information to callers or to collect information from callers before they speak with a live agent
- Intelligent call routing—Calls are routed between contact centers based on call context information (dialed number and caller ID), agent availability, and customer information from databases

Selected Part Numbers and Ordering Information[1]

Cisco IPCC Hosted Edition

IPCH-BUNDLE	The IPCC Hosted Edition bundle consists of two separately licensed sets of components:
	The Base licenses for the shared infrastructure, such as the NAM, the network interfaces, shared network IVRs, CICMs and Hosted IPCC Agent licenses.
	"(redundant) Router
	"(redundant) Logger
	"(redundant) CallManager Peripheral Gateway(s)
	"(redundant) IVR Peripheral Gateway(s) for connection to Cisco IVR systems ISN and IP-IVR (Non-Cisco IVRs require Third part IVR port licenses)
	"Administrative Workstation(s)
	"Historical Database server(s)
	"WebView server and WebView user connections
	"Internet Script Editor (ISE) server and ISE user connections
	"Application Gateways
	"(redundant) CTI Server for 3rd party CTI connections (only for non-agent desktop application)

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco IPCC Enterprise Edition Web site: **http://www.cisco.com/go/ipcchosted**

Cisco IPCC Express Edition

Cisco IPCC Express Edition meets the needs of departmental, enterprise branch, or small to medium-size companies planning to deploy an entry-level or mid-market contact center solution. Designed for formal and informal contact centers, IPCC Express delivers sophisticated call routing, contact management, and administration features with the ease of installation, configuration, and application hosting.

Cisco IPCC Express Edition simplifies business application integration, eases agent administration, increases agent flexibility, and provides efficiency gains in network hosting. Provides independence in agent location, improves agent scalability, and provides powerful automatic call distributor (ACD) features, such as conditional routing, call-in-queue and expected-wait-time messages, enterprise data displays, real-time data, and historical reporting together with integrated Interactive Voice Response (IVR) services.

Cisco IPCC Express Edition is provided in three versions, Standard, Enhanced and Premium. Upgrading from standard to enhanced or premium versions provides additional features such as skills-based routing and priority queuing, computer telephony integration (CTI) screen pop and supervisory features such as silent monitor, coaching, barge in, and intercept and full self-service application support. All Cisco IPCC Express Edition solutions are tightly integrated with Cisco AVVID and Cisco CallManager.

Key Features[1]

- Browser-based Cisco IPCC Express administration is fully integrated with Cisco CallManager browser-based administration
- Cradle-to-grave contact call detail records
- Standard screen allows any caller-entered information to be popped to the agent
- Pre-defined or custom historical reports
- Real-time reports within the agent and supervisor desktops
- Full support for agent/supervisor interaction via chat; Ability to pre-define agent-supervisor messages
- Full IP call queue points and prompt; Collect voice interaction capabilities
- Optional Automatic Speech Recognition (ASR) and Text to Speech (TTS) capabilities
- Support for custom call treatment such as music for calls in queue

Selected Part Numbers and Ordering Information[1]

Cisco IPCC Express Edition

IPCX-3.Y-STANDARD	PCX 3.5 or later 3.Y Standard All-in-One (Servers & SW)
IPCX-3.Y-ENHANCED	PCX 3.5 or later 3.Y Enhanced All-in-One (Servers & SW)
IPCX-3.Y-PREMIUM	PCX 3.5 or later 3.Y Premium All-in-One (Servers & SW)

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco IPCC Express Edition Web site: **http://www.cisco.com/go/icd**

Cisco IP IVR

Cisco IP IVR, an interactive voice response (IVR) solution, provides a feature rich foundation for the creation of an IP-based Cisco IP IVR that is open and expandable.

Key Features

- Written in Java to provide customer flexibility
- Multimedia (voice/data/Web) IP-empowered application-generation environment
- Support for optional Automated Speech Recognition (ASR) and Text-to-Speech (TTS)
- Support for VoiceXML
- Multiple Language support
- Cisco IP IVR can be located in anywhere the IP network
- Offers web-based activation and administration
- Flows (the IP IVR applications) are stored in an industry standard LDAP directory
- Cisco IP IVR is sold with Cisco CallManager and can be co-resident on the same server as CallManager or can function on a separate, dedicated media convergence servers (MCSs) or Cisco-approved customer provided server
- Packages available to scale up to 300 ports

1. Abbreviated list of IPCC Features

Cisco Customer Voice Portal

The Cisco Customer Voice Portal redefines and sets the standard for extending automated self-service beyond the limits of traditional interactive voice response (IVR) systems and voice portal platforms by providing a return on investment (ROI) to lower operational costs in the contact center and help protect technology investments from obsolescence to provide a smooth and consistent multi-channel customer experience. It integrates with both traditional time-division multiplexing (TDM) and IP-based contact centers to provide an unparalleled call-management and call-treatment solution with a self-service IVR option that can use information available to customers on the corporate Web server. With support for automated speech recognition (ASR) and text-to-speech (TTS) capabilities, callers can obtain personalized answers to increasingly complex questions and can conduct business in new and innovative ways-all without the costs of interacting with a live agent.

The Customer Interaction Network is a suite of innovative multi-channel IP communications applications for the contact center that is accessible from any point on the network and integrated with core business processes.

Selected Part Numbers and Ordering Information[1]

Cisco Customer Voice Portal

ISN-APSSVRLIC	ISN APPLICATION SERVER LICENSE
ISN-APSSES-T1-L	ISN APPLICATION SERVER SESSION - TIER 1
ISN-APSSES -T2-L	ISN APPLICATION SERVER SESSION - TIER 2
ISN-APSSES -T3-L	ISN APPLICATION SERVER SESSION - TIER 3
ISN-APSSES -T4-L	ISN APPLICATION SERVER SESSION - TIER 4
ISN-APSSES-LC=	Part number to order additional Application Server session licenses without ordering a server license

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco Internet Service Node Web site: **http://www.cisco.com/go/cvp**

Cisco ICM Enterprise Edition

Through a combination of multi-channel contact management, intelligent routing, and network-to-desktop computer telephony integration (CTI), the Cisco ICM Enterprise Edition segments customers, monitors resource availability, and delivers each contact to the most appropriate resource anywhere in the enterprise. To complete this transaction, the software profiles each customer using contact-related data such as dialed number and calling line ID, caller-entered digits, data submitted on a Web form, or information obtained from a customer profile database lookup. Simultaneously, the system monitors the resources available in the contact center to meet customer needs, including agent skills and availability, interactive-voice-response (IVR) status, and queue lengths.

The Cisco ICM Enterprise Edition gives your customers the choice to interact with your contact center via phone, Web, voice over IP (VoIP), text chat, or e-mail. It provides centralized management control over customer contacts, allowing users to implement a single set of business rules that uniformly address customer needs independent of contact channel or resource location.

This combination of customer and contact center data is processed through user-defined routing scripts that graphically reflect business rules-enabling routing each contact to the optimum resource anywhere in the enterprise. Wherever an agent is based, the system delivers a unique and rich set of call event and customer profile data to the targeted desktop

as a contact arrives, personalizing service and maximizing efficiency. Throughout the process, carrier-class, distributed fault tolerance from the network to the desktop ensures uninterrupted operation in the contact center.

Selected Part Numbers and Ordering Information[1]

Cisco ICM Enterprise Edition

ICME-BUNDLE	Requires the purchase of at least one ACD PG and one ICM Agent license. Functionality included: Monitor 3rd party ACD (call and agent) activity; Call routing, including pre-routing from a carrier network and post-routing from an ACD; Historical Database server(s); WebView server and WebView user connections; Internet Script Editor (ISE) server and ISE user connections; Application, SQL and ICM-to-ICM Gateways; Redundant deployment of all licensed components; Integrations through the ICM's CTI interfaces with 3rd party devices that are not intended for agent desktop usage; Connections to Cisco IVR systems (IP-IVR and ISN) and all related functions an ICM can perform, such as monitoring, reporting and routing.

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco ICM Enterprise Edition Web site: **http://www.cisco.com/go/icmee**

Cisco IP Communicator

Cisco IP Communicator is a software-based application that gives computers the capabilities and features of Cisco IP phones, providing high-quality voice calls and connection to company services while on the road, in the office, or from wherever users may have access to the corporate network. When used remotely, users have access to the same familiar phone services they have in the office. While registered to the Cisco CallManager call processing system, Cisco IP Communicator has the features and functionality of a full-featured Cisco IP Phone including the ability to transfer calls, forward calls, and conference additional participants to an existing call.

Key Features

- Easy to use—Feature parity with Cisco's advanced IP phones, IP phone services support (XML) to deliver company specific applications to the desktop, and auto-detection of Cisco VPN client
- Premium voice quality—Audio Tuning Wizard for setting audio levels properly, advanced jitter buffer and packet loss concealment algorithms, and echo suppression and noise cancellation
- Easy to manage—Unified administration with Cisco IP phones and automatic software upgrades; system administrators can provision as they would any other Cisco IP Phone

Selected Part Numbers and Ordering Information

Cisco IP Communicator

SW-IPCOMM-E1	Cisco IP Communicator Software
SW-CCM-UL-IPCOMM-E	Station User License for Cisco CallManager

For More Information

See the Cisco IP Communicator Web site:
http://www.cisco.com/en/US/products/sw/voicesw/ps5475/index.html

Cisco VT Advantage

Cisco VT Advantage brings video telephony functionality to Cisco IP Phones, providing users with the ability to easily add video to their communications experience. It's software application and Cisco VT Camera, an included USB camera, allows a personal computer co-located with a Cisco IP Phone to add video to phone calls without requiring any extra button-pushing or mouse-clicking. When registered to Cisco CallManager, the Cisco VT Advantage-enabled IP Phone has the features and functionality of a full-featured IP video phone.

Key Features

- Consistent user experience for voice and video—users to talk as they normally would on the phone with call features such as call forward, transfer, conference, hold, and mute are initiated through the phone while available video is viewed through the PC
- Provides ease of use, high-quality video, and more value at a lower cost
- Easy to manage—Unified administration with Cisco IP phones and automatic software upgrades

Selected Part Numbers and Ordering Information

Cisco VT Advantage

CVT-ADV-E1=   Cisco VT Advantage (software and camera included)

For More Information

See the Cisco VT Advantage Web site:
http://www.cisco.com/en/US/products/sw/voicesw/ps5662/index.html

Cisco Personal Assistant

Cisco Personal Assistant streamlines communications with personal call rules, speech recognition, an optional enhanced text-to-speech engine and productivity services for IP phones. As an integral part of Cisco AVVID (Architecture for Voice, Video and Integrated Data), it interoperates with Cisco CallManager and scales to meet the present and future needs of your employees. Users can access voice mail, dial by name, and conference from any telephone using speech recognition instead of the telephone keypad. The Web-based and telephone user administration interfaces allow users to forward and screen calls in advance or in real time. The phone services enable users to check e-mail, voice mail, calendar, and personal contact information using the large, pixel-based LCD and interactive soft keys on the Cisco IP Phone 7940 or 7960.

Key Features

- Ubiquitous Access: Cisco Personal Assistant with Speech Recognition and IP Phone Productivity Services integrate with Cisco CallManager, Cisco Unity, and Microsoft Exchange within Cisco AVVID to streamline communications

- Automatic Speech Recognition (ASR): Speech recognition interface allows users to utilize simple voice commands to perform tasks such as retrieval, replying, recording, and deletion of voice messages; Entries can be dialed from personal address books or the corporate enterprise Lightweight Directory Access Protocol (LDAP) directory; Users can synchronize their Microsoft Exchange contact lists with their personal address books for quick name-dialing and ad-hoc group conferencing; Access to sensitive features such as voice mail is controlled by user authentication

- Manage Inbound and Outbound Calls (Rules-Based Routing): Using a Web interface to create rules, users can forward and screen calls based on caller identification, time of day, and meeting schedules; With "follow me," a special rule that uses speech recognition, users can forward all calls to a phone number immediately; Users can activate sets of pre-created rules from any telephone

- CalendarView: Users can keep track of appointments right on the IP phone, directly from the Microsoft Exchange server with no synchronization necessary. In addition, users can choose to be notified of an upcoming event on the phone display or by pager

- MailView: Cisco Personal Assistant presents users with access to e-mail and Cisco Unity voice-mail messages in the inboxes on the corporate messaging server. Users can access messages from a conference room, lobby phone, or colleague's phone, as well as their own. Any operation performed on the messages using MailView is automatically reflected in Microsoft Exchange and Cisco Unity; Cisco Personal Assistant interfaces with Microsoft Exchange and IMAP 4 message stores for MailView features.

Specifications

Feature	Cisco Personal Assistant
Platform	Cisco Media Convergence Server MCS-7825H-3.0, MCS-7835H-3.0, MCS-7825I-3.0, and MCS-7835I-3.0
Web Server Requirements for IP Phone Productivity Services Platform	Basic Web Server: Microsoft IIS 4.0 or later Separate server for Cisco Personal Assistant Server and Speech Recognition Server
Software Compatibility	Cisco CallManager 3.3+ and 4.1 Cisco Unity 2.46+,3.0+, and 4.0+ for voice-mail features Microsoft Exchange 5.5, Exchange 2000, and Exchange 2003 for calendar, e-mail, contact synchronization features

Selected Part Numbers and Ordering Information[1]

Cisco Personal Assistant

PASR-BUNDLE	Cisco Personal Assistant Bundle
SW_PASR1.4-SVR2S=	Cisco Personal Assistant 1.4 Server Software with Speech Recognition[2]
SW-PASR1-USR=	PA User License
SW-PASR1-USR10=	PA User License
SW-PASR1-KX=	Cisco Personal Assistant 1.4, Expansion Speech Recognition Session[3]
SW-PASR1-TX=	Cisco Personal Assistant 1.4 Enhanced Text-to-Speech Session

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the *Distribution Product Reference Guide* at: http://www.cisco.com/dprg (limited country availability).

2. Cisco Personal Assistant can be purchased with an MCS-7825H-2.2-EVV1 or an MCS-7835H-2.4-EVV1 media convergence server.

3. Various session combinations available.

For More Information

See the Cisco Personal Assistant Web site: **http://www.cisco.com/go/personalassist**

Cisco Survivable Remote Site Telephony (SRST)

Cisco SRST provides key backup telephony functions at remote branch office routers if connectivity to the centrally-located Cisco CallManager fails (i.e. WAN link is interrupted). In this case the Cisco SRST-enabled router will take over and provide robust telephony service (including off-net calls to 911). It is ideal for enterprise organizations looking to cost-effectively deploy IP telephony in their branch office location. SRST v3.2 with 12.3(11)T is available on Cisco 1751V, 1760V, 2600-XM, 2691, 2800 , 3725/3745, and 3800 series of routers.The Cisco Communications Media Module and the Cisco 7200 also support previous versions of SRST.

Key Features

- SRST 3.2 features: Increased Phone support from 480 upto 720 phones; RFC2833 support for SCCP-SIP (vmail) DTMF conversion during SRST; External MOH from live feed; SRST alias command increase from 10 to 50 (Set non registered DN's to call forward on busy/NA); Call Pickup Ringing Extension; COR list increase from 10 to 20; Option to disable H225 TCP keep alive timer to maintain calls during WAN failure (new with 12.3(7)T)
- SRST 2.1 features: International language support; Call forward no-answer/busy to Unity server with Personal Greeting; Cisco 7914 and 7935 support; VG248 support
- SRST 2.0 features: Huntstop support; Music/Tone on Hold; Class of Restriction; Distinctive Ringing; Global forwarding to voicemail across PSTN during Cisco CallManager fallback; TCL based simple AA and IVR on local gateway (SRS Telephony router); Transfer across H323 network of Cisco endpoints; Alias lists for single number to be designated for unregistered phones.

Selected Part Numbers and Ordering Information

SRST 3.2 Platform Density and Feature License Part Numbers

Platform	Number of Phones Supported	Part Number	Part Number (Spare)
Cisco 1751V, 1760V, 2801	Up to 24 phones	FL-SRST-SMALL	FL-SRST-SMALL=
Cisco 261x-XM, 262x-XM, 2811	Up to 36 phones	FL-SRST-36	FL-SRST-36=
Cisco 265xXM, 2821	Up to 48 phones	FL-SRST-MEDIUM	FL-SRST-MEDIUM=
Cisco 2691	Up to 72 phones	FL-SRST-SMALL and FL-SRST-MEDIUM	FL-SRST-SMALL= and FL-SRST-MEDIUM=
Cisco 2851	Up to 96 phones	FL-SRST-96	FL-SRST-96=
Cisco 3725 router	Up to 144 phones	FL-SRST-144	FL-SRST-144=
Cisco, 3745, 7200 NPE300/400	Up to 240 phones	FL-SRST-240	FL-SRST-240=
Cisco 3825	Up to 336 phones	FL-SRST-336	FL-SRST-336 =
Cisco 7200NPE400/G1	Up to 480 phones	FL-SRST-480	FL-SRST-480=
Cisco 3845	Up to 720 phones	FL-SRST-720	FL-SRST-720=

SRST bundles

CISCO2801-SRST/K9	Feature License FL-SRST-SMALL: 8 G.711 channels of DSPs included
CISCO2811-SRST/K9	Feature License FL-SRST-36: 16 G.711 channels of DSPs included
CISCO2821-SRST/K9	Feature License FL-SRST-MEDIUM : 32 G.711 channels of DSPs included
CISCO2851-SRST/K9	Feature License FL-SRST-96: 48 G.711 channels of DSPs included
CISCO3825-SRST/K9	Feature License FL-SRST-168 : 64 G.711 channels of DSPs included
CISCO3845-SRST/K9	Feature License FL-SRST-240: 64 G.711 channels of DSPs included
CISCO1760-V-SRST	Feature License FL-SRST-SMALL: 4 G.711 channels of DSPs included
CISCO2651XM-V-SRST	Feature License FL-SRST-MEDIUM : 30 G.711 channels of DSPs included

For More Information

See the Cisco SRS Telephony Web site: **http://www.cisco.com/go/srs**

Cisco IP Manager Assistant

Cisco IP Manager Assistant (IPMA) provides all the call-routing and display capabilities required in a business environment while giving users a choice of phone devices that better fit their needs. By combining a PC-based console application and various soft keys and display panes on Cisco IP phones, Cisco IPMA can present users job-specific tools to more efficiently manage calls in this important environment.

Cisco IPMA can be configured in either proxy-line mode or shared-line mode. In proxy-line mode, managers and assistants have different directory numbers or lines on their phones, but calls to managers are usually diverted to the assistant's line. In shared-line mode, both managers and assistants share the same directory number, but assistants can handle calls without disturbing managers.

For More Information

See the Cisco Media Convergence Server Web site: **http://www.cisco.com/go/ipma**

Cisco Conference Connection

Cisco Conference Connection is an IP audio conferencing solution that is designed for small and medium businesses. Cisco Conference Connection integrates with Cisco CallManager and can scale from 20 ports to 180 ports in a single system. This application is ideal for enterprises trying to increase productivity while reducing expenses. A simple web-based interface enables employees to manage their conference schedules.

For More Information

See the Cisco Conference Connection Web site:
http://www.cisco.com/en/US/products/sw/voicesw/ps752/index.html

Cisco 7900 Series IP Phones

Cisco IP Phones provide unmatched levels of integrated business functionality and converged communications beyond today's conventional voice systems. The Cisco IP Phone 7970G includes a color, high-resolution backlit touch-screen display promoting easy access to feature-rich phone functionality and time-saving applications. The Cisco IP Phone 7960G "manager set" addresses the communication needs of the professional, with a high or busy amount of phone traffic. The Cisco IP Phone 7940G "business set" addresses the communication needs of a transaction type worker, in a office cubicle environment, who conducts medium to high telephone traffic. The Cisco IP Phone 7912G, 7910G+SW and 7905G "basic sets" address the communication needs of a cubicle worker who conducts low to medium telephone traffic. The Cisco IP Phone 7902G "entry set" addresses voice communication needs of a lobby, lab, manufacturing floor, and other areas where only a minimal amount of features are required. Cisco IP Phone Expansion Module 7914 extends the Cisco IP Phone 7960G with additional buttons and LCD, increasing the total number of buttons to 20 with one module, or 34 with two modules. Cisco IP Conference Station 7936, a high-quality hands-free conference station, is designed for use on desktops and offices and in small to medium-sized conference rooms.

Key Features

- Dynamic soft keys present calling options based on context
- Open APIs using XML to deliver applications to the display
- Automatic phone discovery, VLAN configuration, and registration
- QoS is provided via support of 802.1pq, in addition to configurable DIFFSERV and TOS
- Voice-activity detection, silence suppression, comfort-noise generation, and error concealment
- G.711a, G.711u, G.729ab audio-compression coder-decoders (codecs)
- Software upgrade support via Trivial File Transfer Protocol (TFTP) server
- Microsoft NetMeeting enabled—features such as application sharing and video conferencing
- Integrated Ethernet Switch supporting Ethernet connectivity for a downstream PC
- Integrated Inline power support allows the phone to receive power over the LAN
- A hearing-aid-compatible handset

Specifications

Feature	7960G	7970G	7914 Expansion Module	IP Conference Station 7936
Display	Pixel-Based	Pixel-based	Pixel-based	Pixel-Based
Dynamic Soft Keys	4	8	N/A	3
Inline Power	Yes	Yes	Yes	No
10/100Base-T Ethernet Switch	Yes	yes	N/A	No
Lines	6	8	14	1
Speaker Phone	Yes	Yes	N/A	Yes
Headset Jack	Yes	Yes	N/A	No
3rd Party XML Applications	Yes	Yes	N/A	No

Feature	7902G	7905G	7910G+SW	7912G	7940G
Display	None	Pixel-Based	Character-Based	Pixel-based	Pixel-Based
Dynamic Soft Keys	0	4	0	4	4
Inline Power	Yes	Yes	Yes	Yes	Yes
10/100Base-T Ethernet Switch	No	No	Yes	Yes	Yes
Lines	1	1	1	1	2
Speaker Phone	No	Monitor Only	Monitor Only	Monitor Only	Yes
Headset Jack	No	No	No	No	Yes
3rd Party XML Applications	No	Yes	No	Yes	Yes

Selected Part Numbers and Ordering Information[1]

Cisco 7900 Series IP Power and Phones

CP-7960G	Cisco IP Phone 7960G, Manager Set
CP-7940G	Cisco IP Phone 7940G, Business Set
CP-7912G	Cisco IP Phone 7912G, Basic Set w/ Switch
CP-7910G+SW	Cisco IP Phone 7910G+SW, Basic Set w/ Switch
CP-7905G	Cisco IP Phone 7905G, Basic Set
CP-7902G	Cisco IP Phone 7902G, Entry Set
CP-7936	Cisco IP Conference Station
CP-7914=	Cisco 7914 IP Phone Expansion Module for the 7960 IP Phone
CP-SINGLFOOTSTAND=	Single module footstand
CP-DOUBLFOOTSTAND=	Double module footstand
CP-WALLMOUNTKIT=	Non-Locking Wall Mount Kit for 7910/40/60G series IP phones
CP-LCKNGWALLMOUNT=	Locking Wallmount Kit for the 7910/40/60G series IP phones
CP-LCKNGWALLMNT2=	Locking Wallmount Kit for all 7900 series IP phones
CP-PWR-CUBE=	IP Phone power transformer for 7900 series IP phones
WS-PWR-PANEL	Catalyst 48 port Inline Power Patch Panel

1. This is only a small subset of all parts. Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco IP Telephones Web site: **http://www.cisco.com/go/iptel**

Cisco ATA Series of Analog Telephone Adaptors

The Cisco ATA 186 and 188 Analog Telephone Adaptors bring analog telephones into the networked world. The Cisco ATA series of products address the low-end product portfolio need by targeting the enterprise, business local services, small-office environment and the emerging managed voice services market. These cost effective handset-to-Ethernet adaptors enable analog devices, such as phones and fax machines, to support voice-over-IP (VoIP) services. The Cisco ATA 186 is equipped with, and a single RJ-45 Ethernet port. The Cisco ATA 188 has two RJ-11 voice ports and two RJ-45 ports. The internal Ethernet switch allows for a direct connection to a 10/100BASE-T Ethernet network and connectivity to a co-located PC or other Ethernet-based device via the RJ-45 ports.

Both models ship with a bootload image and must be upgraded to a signaling firmware image available on Cisco.com before deployment. Cisco ATAs can be configured[1] to use the standards-based Voice over IP (VoIP) protocols H.323, Session Initiation Protocol (SIP), Media Gateway Control Protocol (MGCP) and Skinny Client Control Protocol (SCCP).

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco ATA Series of Analog Telephone Adaptors	• Enable analog devices, such as phones and fax machines, to support Voice over IP services by converting the analog signal into an IP signal • Continue use of existing analog phones with IP network

Key Features

- Auto-provisioning with Trivial File Transfer Protocol (TFTP) provisioning servers
- Automatic assignment of IP address, network route IP, and subnet mask via Dynamic Host Configuration Protocol (DHCP)
- Optional web configuration through built-in Web server
- Optional touch-tone telephone keypad configuration with voice prompt
- Administration password to protect configuration and access
- Advanced pre-processing to optimize full-duplex voice compression
- High performance line-echo cancellation eliminates noise and echo
- Voice activity detection (VAD) and comfort noise generation (CNG) save bandwidth by delivering voice, not silence
- Dynamic network monitoring to reduce jitter artifacts such a packet loss

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1. Two software image combinations are available on Cisco.com: H.323/SIP and MGCP/SCCP. MGCP/SCCP image includes the letters, ms, in its name.

Specifications

Feature	Cisco ATA 186	Cisco ATA 188
Telephone and network interfaces	2 RJ-11 FXS ports	2 RJ-11 FXS ports
	1 RJ-45 interface for network connection	1 RJ-45 interface for network connection
		1 RJ-45 "switch port" for connection to PC or another downstream Ethernet device
		Note: "Daisychaining" multiple ATAs together through the second RJ45 port is not supported
Dimensions (H x W x D)	1.5 x 6.5 x 5.75 in. (3.8 x 16.5 x14.6 cm)	1.5 x 6.5 x 5.75 in. (3.8 x 16.5 x14.6 cm)
Weights	15 oz (425 gm)	15 oz (425 gm)
Voice-over-IP (VoIP) protocols	H.323 v2; H.323 v4; SIP (RFC 2543); MGCP 1.0 (RFC 2705); MGCP 1.0/network-based call signaling (NCS) 1.0 Profile; MGCP 0.1; SCCP	H.323 v2; H.323 v4; SIP (RFC 2543); MGCP 1.0 (RFC 2705); MGCP 1.0/network-based call signaling (NCS) 1.0 Profile; MGCP 0.1; SCCP

Selected Part Numbers and Ordering Information[1]

Cisco ATA Series of Analog Telephone Adaptors

ATA186-I1-A	Cisco ATA 186 2-port adaptor, 600 ohm impedance
ATA186-I2-A	Cisco ATA 186 2-port adaptor, complex impedance (270 ohm in series with 750 ohm and 150 nF in parallel)
ATA188-I1-A	Cisco ATA 188 2-port adaptor with switch, 600 ohm impedance
ATA188-I2-A	Cisco ATA 188 2-port adaptor with switch, complex impedance (270 ohm in series with 750 ohm and 150 nF in parallel)

Cisco ATA Series of Analog Telephone Adaptors Power Supply Cables

ATACAB-NA	ATA power supply cable for North American-style power systems
ATACAB-EU	ATA power supply cable for Continental European-style power systems
ATACAB-UK	ATA power supply cable for United Kingdom
ATACAB-AR	ATA power supply cable for Argentina
ATACAB-JP	ATA power supply cable for Japan
ATACAB-AU	ATA power supply cable for Australia

1. Some countries have telephone networks that list multiple impedance requirements. It is important to closely approximate the impedance of the typical handsets used in the region when selecting the proper configuration. The incorrect choice may lead to poor echo cancellation performance.

For More Information

See the Cisco ATA Series Web site: **http://www.cisco.com/go/ata186**

Cisco MCS 7800 Series Media Convergence Servers

Cisco MCS 7815-I1

- Provides an entry level tower server equipped with an Intel Pentium™ 4 3060MHz processor, 80GB Serial Attached ATA (SATA) hard drive and single non-hot-swap power supply

Cisco MCS 7825-H1 and Cisco MCS 7825-I1

- Each provides an entry level rack mount server that occupies only one rack mounting space
- Equipped with an Intel Pentium™ 4 3.4GHz processor, two 80GB Serial Attached ATA (SATA) hard drives configured as RAID1 and a single non-hot-swap power supply
- Limited to Unity applications only

Cisco MCS 7825H-3000

- Provides an entry level rack mount server that occupies only one rack mounting space
- Equipped with an Intel Pentium™ 4 3060MHz processor, 40GB ATA hard drive and a single non-hot-swap power supply

Cisco MCS 7825I-3000

- Provides an entry level rack mount server that occupies only one rack mounting space.
- Equipped with an Intel Pentium™ 4 3060MHz processor, 80GB SATA hard drive and a single non-hot-swap power supply
- Not supported for Unity operation

Cisco MCS 7835-H1 and Cisco MCS 7835-I1

- Each provides a highly available mid-level rack mounted server solution that is equipped with an Intel Nocona Xeon™ 3400MHz processor, up to six hot-swap Small Computer Systems Interface (SCSI) hard disks, a Redundant Array of Independent Disks (RAID) 1/0 Controller, hot-swap redundant fans and redundant hot-swap power supplies.
- An optional tape backup is available

Cisco MCS 7845-H1 and Cisco MCS 7845-I1

- Each provides a powerful and highly reliable high level rack mounted server solutions
- Equipped with two Intel Nocona Xeon™ 3400MHz processors, up to six hot-swap SCSI hard disks, RAID 1/0 controller, redundant hot-swap fans and redundant hot-swap power supplies
- An optional tape backup is available for both

Specifications

MCS-7815-I1	MCS-7825-H1	MCS-7825-I1	MCS-7825H-3000	MCS 7825I-3000
Intel PentiumÆ 4 3060-MHz processor 512KB L2 Cache	Intel PentiumÆ 3400-MHz processor 1024KB L2 Cache	Intel PentiumÆ 3400-MHz processor 1024KB L2 Cache	Intel PentiumÆ 3060-MHz processor 512KB Cache	Intel PentiumÆ 3060-MHz processor 1024KB L2 Cache
1024MB SDRAM	1024MB SDRAM	1024MB SDRAM	1024MB SDRAM	1024MB SDRAM
80GB SATA Hard Disk	Dual 80GB SATA Hard Disk	Dual 80GB SATA Hard Disk	40GB ATA Hard Disk.	80GB SATA Hard Disk
1.44MB Floppy Disk	1.44MB Floppy Disk	1.44MB Floppy Disk	1.44MB Floppy Disk	1.44MB Floppy Disk
DVD Drive	DVD Drive	DVD Drive	DVD Drive	DVD Drive
Integrated SATA Controller	Integrated SATA Controller-RAID1	Integrated SATA Controller-RAID1	ATA/100 Controller	Integrated SATA Controller
Single 10/100/1000 Ethernet NIC	Dual 10/100/1000 Ethernet NIC1U Rack Mount System	Dual 10/100/1000 Ethernet NIC1U Rack Mount System	Dual 10/100/1000 Ethernet NIC2U Rack Mount System	Dual 10/100/1000 Ethernet NIC1U Rack Mount
Tower System with optional rack mount kit.				

Specifications (Con.)

MCS 7835-H1	MCS 7835-I1	MCS-7845-H1	MCS-7845-I1
Intel XeonÆ 3400-MHz processor 1024KB Cache	Intel XeonÆ 3400-MHz processor 1024KB Cache	Dual Intel XeonÆ 3400-MHz processor 1024KB Cache	Dual Intel XeonÆ 3400-MHz processor 1024KB Cache
2048MB SDRAM	2048MB SDRAM	SDRAM is configuration dependant	SDRAM is configuration dependant
Two-72GB SCSI Hard Disk	Two-72GB SCSI Hard Disk	Hard Disk is configuration dependant	Hard Disk is configuration dependant
1.44MB Floppy Disk	1.44MB Floppy Disk	1.44MB Floppy Disk	1.44MB Floppy Disk
DVD Drive	DVD Drive	DVD Drive	DVD Drive
SCSI Controller.	SCSI Controller.	SCSI Controller.	SCSI Controller.
Dual 10/100/1000 Ethernet NIC2U Rack Mount System	Dual 10/100/1000 Ethernet NIC2U Rack Mount System	Dual 10/100/1000 Ethernet NIC2U Rack Mount System	Dual 10/100/1000 Ethernet NIC2U Rack Mount System

Selected Part Numbers and Ordering Information[1]

Cisco Media Convergence Server 7800

MCS-7815-I1-IPC1, MCS-7815-I1-ECS1, MCS-7815-I1-CC1	Cisco Media Convergence Server 7815-I1
MCS-7825-H1-ECS1	Cisco Media Convergence Server 7825-H1
MCS-7825-I1-ECS1	Cisco Media Convergence Server 7825-I1
MCS-7825H-3.0-IPC1, MCS-7825H-3.0-CC1	Cisco Media Convergence Server 7825H-3000
MCS-7825I-3.0-IPC1, MCS-7825I-3.0-CC1	Cisco Media Convergence Server 7825I-3000
MCS-7835-H1-IPC1, MCS-7835-H1-ECS1, MCS-7835-H1-CC1	Cisco Media Convergence Server 7835-H1
MCS-7835-I1-IPC1, MCS-7835-I1-ECS1, MCS-7835-I1-CC1	Cisco Media Convergence Server 7835-I1
MCS-7845-H1-IPC1, MCS-7845-H1-ECS1, MCS-7845-H1-ECS2, MCS-7845-H1-CC1	Cisco Media Convergence Server 7845-H1
MCS-7845-I1-ECS1, MCS-7845-I1-ECS2	Cisco Media Convergence Server 7845-I1

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco Media Convergence Server Web site: **http://www.cisco.com/go/mcs**

Cisco Voice Gateways

Voice Gateways interface directly to PBXs or public telephone networks to carry voice traffic across IP networks—by converting IP calls to standard telephony calls and vice versa. They provide connectivity between packet telephony and legacy telephony such as PSTN, PBX, fax machines, and other devices. Cisco offers the Cisco VG 248 and VG 224 dedicated analog voice gateways.

Cisco's full line of multiservice routers can also add analog and digital voice gateway functionality through the use of network modules and voice interface cards[1].

Cisco VG 224 Voice Gateway

The Cisco VG 224 is a Cisco IOS high-density 24-port gateway for analog phones, fax machines, modems, and speakerphones within an enterprise voice system based on Cisco CallManager. Having these devices tightly integrated with the IP-based phone system is advantageous for increased manageability, scalability, and cost-effectiveness. Commercial businesses can also use the Cisco VG 224 in conjunction with Cisco CallManager Express to effectively augment a Full Service Branch router environment. This topology environment supports a businesses needs of high concentration of analog voice ports for basic calls, with some supplementary services.

Cisco VG248 Voice Gateway

The Cisco VG248 Voice Gateway is a 1 unit high rack mountable device allowing 48 analog devices (phones, fax machines & modems) to be used with Cisco Call Manager. It enables organizations with large numbers of analog phones (hotels, universities, hospitals, etc.) to deploy IP Telephony while maintaining the investment in legacy handsets. The analog lines are full featured (caller id, message waiting lights, feature codes) and the price per port is competitive with a legacy PBX.

The VG 248 supports the legacy voicemail Simple Message Desk Interface (SMDI) mail interface that allows the connection of a Cisco Call Manager network to a legacy voicemail system. It also will allow the sharing of existing SMDI based voicemail systems between the Cisco Call Manager and the legacy PBX.

Selected Part Numbers and Ordering Information

Cisco VG 248 Voice Gateway

VG 224	Cisco VG 224 Analog Phone Gateway
VG 248	48 Port Voice over IP analog phone gateway

For More Information

1. Please see the 1700, 2600, 3600, 7200, 5x00 series in Chapter 1—Routers, Chapter 7—Access Products.

See the Cisco Voice Gateways Web site: **http://www.cisco.com/go/voicegate**

Cisco MeetingPlace

Cisco MeetingPlace—part of the Cisco IP Communications system—is a complete rich-media conferencing solution that seamlessly integrates voice, video, and Web conferencing capabilities to make remote meetings as natural and effective as face-to-face meetings for unmatched productivity gains. It is deployed "on network" behind the firewall and integrated directly into an organization's private voice and data networks and collaborative applications to provide significant cost savings, the utmost in security, and a superior user experience. Intuitive interfaces make setting up, attending, and managing meetings easy.

Key Features

- Immediate or future voice, video, and Web conferences can be set up and attended in a single step—from Cisco IP phones, instant messaging clients, Web browsers, and Microsoft Outlook and Lotus Notes calendars; Meeting participants have total control over their voice, video, and Web conference from a single browser interface
- Allows enterprises to isolate their confidential meetings and content behind the firewall for secure data network transport while providing the flexibility to meet with external parties
- Deployed in a variety of ways—on premises or hosted, customer managed or outsourced; Cisco Managed Solutions and managed services partners can provide system administration and end-user help desk functions for on-premises or hosted systems

Selected Part Numbers and Ordering Information[1]

Cisco MeetingPlace 8100 Solution Bundles

MP-8106-30IP	Cisco MeetingPlace 8106 30UL IP Solution Bundle
MP-8106-48	Cisco MeetingPlace 8106 48UL T1-CAS Solution Bundle
MP-8106-120IP	Cisco MeetingPlace 8106 120UL IP Solution Bundle
MP-8112-180IP	Cisco MeetingPlace 8112 180UL IP Solution Bundle
MP-8112-180PRI	Cisco MeetingPlace 8112 180UL PRI Solution Bundle
MP-8112-192	Cisco MeetingPlace 8112 192UL T1-CAS Solution Bundle
MP-8112-510IP	Cisco MeetingPlace 8112 510UL IP Solution Bundle
MP-8112-510PRI	Cisco MeetingPlace 8112 510UL PRI Solution Bundle
MP-8112-600	Cisco MeetingPlace 8112 600UL T1-CAS Solution Bundle

Cisco MeetingPlace Hardware and Software options

MP-SMARTBLADE	Cisco MeetingPlace Audio Conference Module, 96 ports with 4xT1-CAS
MP-MA-4	Cisco MeetingPlace Gateway Module, 120 IP ports
MP-MA-4-PRI	Cisco MeetingPlace Gateway Mod., 4xPRI (T1/E1)
MP-MA-16	Cisco MeetingPlace Gateway Mod., 480 IP ports
MP-MA-16-PRI	Cisco MeetingPlace Gateway Module 16xPRI (T1/E1)
MP-AUDIO-UL-24	Cisco MeetingPlace Audio Conference user license bundle, 24 user licenses
MP-AUDIO-UL-30	Cisco MeetingPlace Audio Conference. user license bundle, 30 user licenses
MP-MTGTM-SITE-5.3	Cisco MeetingPlace MeetingTime Site License
MP-FLEX-MENU	Cisco MeetingPlace Flex Menu Option
MP-LANG-5.3	Cisco MeetingPlace Multilingual System License

Web Conferencing Options

MP-WEBCONFSW-5.3	Cisco MeetingPlace Web Conferencing Server Application (includes 20 concurrent Web conferencing user licenses)
MP-RM-RECORDING	Cisco MeetingPlace Web Voice Recording System License
MP-CONF-UI-5.3	Cisco MeetingPlace Conferencing User Interface (included in Cisco MeetingPlace Solution Bundles)
MP-WEB-UL-20	Cisco MeetingPlace Web Conferencing 20 user licenses bundle

Integration Applications

MP-VIDEO	Cisco MeetingPlace Video Integration
MP-IP-GW	Cisco MeetingPlace H.323/SIP Gateway Application (included in Cisco MeetingPlace Solution Bundles)
MP-EMAIL-5.3	Cisco MeetingPlace SMTP E-mail Gateway Application (included in Cisco MeetingPlace Solution Bundles)
MP-OUTLOOK-5.3	Cisco MeetingPlace for Outlook Integration Application
MP-NOTES-5.3	Cisco MeetingPlace for Lotus Notes Integration Application
MP-DIRSVCS-5.3	Cisco MeetingPlace Directory Services 5.3
MP-IM	Cisco MeetingPlace Instant Messaging Integration Application

1. Some countries have telephone networks that list multiple impedance requirements. It is important to closely approximate the impedance of the typical handsets used in the region when selecting the proper configuration. The incorrect choice may lead to poor echo cancellation performance.

For More Information

See the Cisco MeetingPlace Web site: **http://www.cisco.com/go/meetingplace**

Cisco IP/VC 3500 Series Videoconferencing Products

The Cisco IP videoconferencing (IP/VC) solution—a component of the Cisco rich-media communications solution—enables face-to-face discussions among conferencing participants. The Cisco IP/VC is for enterprises and service providers who want a reliable, easy-to-manage, cost-effective network infrastructure for rich-media conferencing, video telephony and videoconferencing.

Cisco IP/VC 3500 MCU series connects three or more videoconference endpoints (H.323, SCCP, H.320, SIP) in a single, multi-participant meeting. The Cisco IP/VC product family consists of the IP/VC 3511 Multipoint Control Unit (MCU, also known as a "video bridge"), the IP/VC 3521 and 3526 H.320 to H.323 Gateways and the IP/VC 3540—Series Videoconferencing System. Cisco IP/VC works with H.323-standards-based videoconference client devices from a variety of vendors and integrates with legacy H.320 networks. When used in conjunction with the Enhanced Media Processor (EMP), users experience best-in-class voice and video solutions. If needed, users with access to H.320 endpoints can also participate in a videoconference through the Cisco IP/VC videoconferencing gateway.

Key Features

- Enhanced video experience for users in their voice communications solutions as part of the latest releases of multipoint control unit (MCU) software; No longer restricted to traditional videoconferencing, users can extend the value of video and the IP/VC products by integrating with Cisco CallManager and Cisco MeetingPlace products to enable Video Telephony and Rich-media Conferencing solutions

- The Cisco IP/VC 3511 Multipoint Control Unit (MCU)—1RU stack/rack-mount system enabling ad-hoc videoconferences between three or more endpoints. It is suitable for small to medium enterprises and remote branch offices in larger enterprises

- The IP/VC 3521 and the IP/VC 3526 Videoconferencing Gateways—1RU stack/rack-mount systems that translate between H.320 and H.323 protocols; The IP/VC 3521 provides up to four BRI interfaces and the IP/VC 3526 provides one ISDN T1/E1 PRI interface

- The IP/VC 3540 Videoconferencing System integrates multipoint control units, and gateways in a single platform for cost-effective deployment of IP-centric videoconferencing networks

• The Multimedia Conference Manager (MCM) software—part of Cisco IOS Software and available across a wide range of Cisco router platforms, including the Cisco 2600/2600XM, 3600, 3700, and 7200 series; As a gatekeeper/proxy, it enables network managers to control and secure bandwidth and priority settings for H.323 videoconferencing services

Selected Part Numbers and Ordering Information[1]

Cisco IP/VC 3500 Series Videoconferencing Products

IPVC-3511-MCU	IP/VC 3511 Multipoint Control Unit
IPVC-3511-MCU-E	IP/VC 3511 Multipoint Control Unit and Enhanced Media Processor
IPVC-3544-CHAS	IPVC 3544 Four Slot Chassis
IPVC-3540-MC03A	IPVC 3540 Series MCU Modules - 30 Port Session
IPVC-3540-MC06A	IPVC 3540 Series MCU Modules - 60 Port Session
IPVC-3540-MC10A	IPVC 3540 Series MCU Modules - 100 Port Session
IPVC-3540-EMP	IP/VC 3540 Enhanced Media Processor
IPVC-3540-EMP3	IP/VC 3540 Enhanced Media Processor 3
IPVC-3540-XAM03	IP/VC 3540 MCU Audio Transcoder Cards - 30 Port MCU Daughter card
IPVC-3540-XAM06	IP/VC 3540 MCU Audio Transcoder Cards - 60 Port MCU Daughter card

1. This is only a small subset of all parts available. Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco IP/VC 3500 series Web site: **http://www.cisco.com/go/ipvc**

Cisco IP/TV 5.2

Cisco IP/TV 5.2 delivers a complete, highly scalable, bandwidth-efficient solution for high-quality video communications over enterprise networks. Cisco IP/TV supports live video, scheduled video, video on demand (VOD), synchronized presentations and screen captures, and a wide range of video management functions. The solution enables a broad spectrum of applications for enterprise communications including training, corporate communications, business TV, and distance learning.

The Cisco IP/TV 5.2 solution is purchased as Cisco IP/TV 3400 Series Server appliances which will include the IP/TV client viewer software, SlideCast, Stream Watch and other applications to enable a turn-key enterprise IP broadcasting solution. The Cisco IP/TV 3400 Series servers contain pre-configured software, preinstalled capture cards, network interface cards, and device drivers. The Cisco IP/TV 3400 Series includes the IP/TV 3441 Broadcast Server, the IP/TV 3442 Broadcast Server, the IP/TV 3427 Broadcast Servers, and the IP/TV Program Manager device mode of the ACNS 566 Content Engine. This product family offers a range of choices to best suit large-scale enterprise applications, performance requirements, and bandwidth availability.

Selected Part Numbers and Ordering Information[1]

Cisco IP/TV 3400 Series Video Servers

IPTV-3441-BCAST	Cisco IP/TV 3441 Broadcast Server, (1) MPEG-1/2
IPTV-3442-BCAST	Cisco IP/TV 3442 Broadcast Server, (4) MPEG-4
IPTV-3427-BCAST-C1	Cisco IP/TV 3427 Broadcast Server, (6) MPEG-4
IPTV-3427-BCAST-C2	Cisco IP/TV 3427 Broadcast Server, (6) MPEG-4, (2) MPEG-1/2
IPTV-3427-BCAST-C3	Cisco IP/TV 3427 Broadcast Server, (2) MPEG-4, (3) MPEG-1/2
CE-566-K9	IP/TV Program Manager device mode of the Cisco ACNS 566 Content Engine (standard configuration, no extra licenses needed)

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See the IP/TV 3400 series Web site: **http://www.cisco.com/go/iptv**

Cisco Voice Router Bundles

Cisco Voice router bundles based on the Cisco 1760, 2600XM, 2691, and 3800 access router platforms provide customers with a single part number for ease of ordering. These voice bundles are especially designed for the application of toll bypass, PSTN or PBX to IP connectivity with Cisco CallManager, or other voice applications where connectivity from IP to PSTN is required.

Each Voice bundle provides DSP resources to support PSTN connectivity to IP, necessary memory, and recommended Cisco IOS feature set..

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco Voice Router Bundles	• Deploying access router where toll bypass application is required • Deploying Cisco CallManager and PSTN or PBX gateway is required • Customer may need voice application in the future and wants investment protection on initial purchase

Selected Part Numbers and Ordering Information[1]

Cisco Voice Router Bundles

CISCO1760-V	1760 Router, 32MB Flash, 96MB DRAM, PVDM-256K-4, IOS IP Voice Feature Set
CISCO2651XM-V	2651 Router, 32MB Flash, 128MB DRAM, AIM-VOICE-30 (DSP for 30 calls), IOS IP Voice.
CISCO2801-V/K9	2801 Router, 64MB Flash, 256MB DRAM, PVDM2-8 (DSP for 8 calls), IOS SP Services
CISCO2811-V/K9	2811 Router, 64MB Flash, 256MB DRAM, PVDM2-16 (DSP for 16 calls), IOS SP Services
CISCO2821-V/K9	2821 Router, 64MB Flash, 256MB DRAM, PVDM2-32 (DSP for 32 calls), IOS SP Services
CISCO2851-V/K9	2851 Router, 64MB Flash, 256MB DRAM, PVDM2-48 (DSP for 48 calls), IOS SP Services
CISCO3825-V/K9	3825 Router, 64MB Flash, 256MB DRAM, PVDM2-64 (DSP for 64 calls), IOS SP Services
CISCO3845-V/K9	3845 Router, 64MB Flash, 256MB DRAM, PVDM2-64 (DSP for 64 calls), IOS SP Services

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See Routing, page 1-1 for product details.

Cisco CallManager Express Bundles

Designed for enterprise branch offices, small and midsize businesses, and managed network service providers who seek consolidated, easy to order CallManager Express enabled routers. Each of these bundles provide a versatile, cost-effective solution that offer integrated IP Telephony and data services via a single router platform and include Cisco CallManager Express feature license, DSP resources to support PSTN connectivity to IP, necessary memory and recommended Cisco IOS feature set.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco CCME Router Bundles	• SMB or Enterprise branch locations looking for data and distributed call processing using Cisco CallManager Express in a all-in-one solution based on Cisco access router • Support for 24 to 240 Phones per location • Customers who may need IP Telephony application in the future and wants investment protection on initial purchase

Selected Part Numbers and Ordering Information[1]

Cisco CCME Router Bundles

CISCO1760-V-CCME	1760 Router, 32MB Flash, 96MB DRAM, PVDM-256K-4, IOS IP Voice Feature Set
CISCO-2611XM-V-CCME	2611XM router, 32 MB Flash, 128 MB DRAM, NM-HD-2V (for 8 calls) Cisco IOS IP Voice
CISCO2651XM-V-CCME	2651 Router, 32MB Flash, 128MB DRAM, AIM-VOICE-30 (DSP for 30 calls), IOS IP Voice.
CISCO2801-CCME/K9	2801 Router, 64MB Flash, 256MB DRAM, PVDM2-8 (DSP for 8 calls), IOS SP Services
CISCO2811-CCME/K9	2811 Router, 64MB Flash, 256MB DRAM, PVDM2-16 (DSP for 16 calls), IOS SP Services
CISCO2821-CCME/K9	2821 Router, 64MB Flash, 256MB DRAM, PVDM2-32 (DSP for 32 calls), IOS SP Services
CISCO2851-CCME/K9	2851 Router, 64MB Flash, 256MB DRAM, PVDM2-48 (DSP for 48 calls), IOS SP Services
CISCO3825-CCME/K9	3825 Router, 64MB Flash, 256MB DRAM, PVDM2-64 (DSP for 64 calls), IOS SP Services
CISCO3845-CCME/K9	3845 Router, 64MB Flash, 256MB DRAM, PVDM2-64 (DSP for 64 calls), IOS SP Services

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See Routing, Page 1-1 for detailed product information.

See Cisco CallManager Express, page 4-9 for product details.

Cisco Survivable Remote Site (SRST) Bundles

Designed for enterprise branch offices, small and midsize businesses, and managed network service providers who seek consolidated, easy to order SRST enabled routers. Each of these bundles provide a versatile, cost-effective solution that offer voice connectivity, call processing redundancy and data services via a single Enterprise Router platform and include Cisco Survivable Remote Site Telephony (SRST) feature license, DSP resources to support PSTN connectivity to IP, necessary memory and recommended Cisco IOS feature set.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco Survivable Remote Site (SRST) Bundles	• Survivable Remote Site Telephony (SRST) for remote branch locations with Centralized Cisco CallManager deployments • Support for 24 to 720 phones in SRST mode • Customers who may deploy Cisco CallManager in the future and wants investment protection on initial purchase

Selected Part Numbers and Ordering Information[1]

Cisco Survivable Remote Site (SRST) Bundless

CISCO1760-V-SRST	1760 Router, 32MB Flash, 96MB DRAM, PVDM-256K-4, 24 Phone SRST FL, IOS IP Voice
CISCO2651XM-V-SRST	2651 Router, 32MB Flash, 128MB DRAM, AIM-VOICE-30 (DSP for 30 calls), 48 Phone FL, IOS IP Voice.
CISCO2801-SRST/K9	2801 Router, 64MB Flash, 256MB DRAM, PVDM2-8 (DSP for 8 calls), IOS SP Services
CISCO2811-SRST/K9	2811 Router, 64MB Flash, 256MB DRAM, PVDM2-16 (DSP for 16 calls), IOS SP Services
CISCO2821-SRST/K9	2821 Router, 64MB Flash, 256MB DRAM, PVDM2-32 (DSP for 32 calls), IOS SP Services
CISCO2851-SRST/K9	2851 Router, 64MB Flash, 256MB DRAM, PVDM2-48 (DSP for 48 calls), IOS SP Services
CISCO3825-SRST/K9	3825 Router, 64MB Flash, 256MB DRAM, PVDM2-64 (DSP for 64 calls), IOS SP Services
CISCO3845-SRST/K9	3845 Router, 64MB Flash, 256MB DRAM, PVDM2-64 (DSP for 64 calls), IOS SP Services

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See Cisco Survivable Remote Site Telephony (SRST), page 4-20 for product details.

Cisco V3PN Bundles

Designed for enterprise branch offices, small and midsize businesses, and managed network service providers who seek security and IPCommunications capabilities in the same platform. V3PN bundle includes CME Features license, DSP resources for PSTN to IP calls, Advanced IP Services and AIM-VPN Accelerator card for maximum performance of security features including VPN tunneling

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco V3PN Bundles	• SMB or Enterprise branch locations looking for data, IP Telephony and VPN in a all in one solution based on Cisco Access router
	• Support for 24 to 240 Phones per location
	• Customers who may need IP Telephony application in the future and wants investment protection on initial purchase

Selected Part Numbers and Ordering Information[1]

Cisco V3PN Bundles

CISCO2801-V3PN/K9	2801 Router, 64MB Flash, 256MB DRAM, PVDM2-8 (DSP for 8 calls), IOS SP Services
CISCO2811-V3PN/K9	2811 Router, 64MB Flash, 256MB DRAM, PVDM2-16 (DSP for 16 calls), IOS SP Services
CISCO2821-V3PN/K9	2821 Router, 64MB Flash, 256MB DRAM, PVDM2-32 (DSP for 32 calls), IOS SP Services
CISCO2851-V3PN/K9	2851 Router, 64MB Flash, 256MB DRAM, PVDM2-48 (DSP for 48 calls), IOS SP Services
CISCO3825-V3PN/K9	3825 Router, 64MB Flash, 256MB DRAM, PVDM2-64 (DSP for 64 calls), IOS SP Services
CISCO3845-V3PN/K9	3845 Router, 64MB Flash, 256MB DRAM, PVDM2-64 (DSP for 64 calls), IOS SP Services

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See individual product pages for more detail

VPN and Security

VPN and Security Products at a Glance

Product	Features	Page
Cisco PIX Security Appliance	Market-leading, purpose-built appliances which provide broad range of integrated security services	5-2
	• Robust stateful inspection firewalling with advanced application and protocol inspection	
	• High-performance and scalable remote access and site-to-site VPN	
	• Inline intrusion prevention for real-time response to network attacks	
	• Enhanced routing and network integration	
	• Extensive support for multimedia and VoIP applications	
	• Award-winning firewall stateful failover for enterprise-class resiliency	
Firewall Blade for Catalyst 6500	Firewall Module is a high performance integrated stateful firewall solution for Catalyst 6500 family of switches with performance exceeding 5GB. It is based on proven PIX technology while providing the following benefits to the customers	2-21
	• Investment protection	
	• Low cost of ownership	
	• Ease of use	
	• Operational Consistency	
	• Scalability	
	See the Catalyst 6500 Series Switch in Chapter 2: LAN Switching, page 2-21, for more information	
Cisco VPN 3000 Family	Remote access Virtual Private Network platform	5-5
	• Supports IPsec and SSL (WebVPN) remote connectivity	
	• Has models for all size companies, from small to large enterprise organizations	
	• Reduces communications expenditures	
	• Enables users to easily add capacity and throughput	
Cisco Security Agent	Provides threat protection for desktop and server computing systems by identifying and preventing malicious activity:	5-9
	• Aggregates and extends multiple endpoint security functions	
	• Protects against know and unknown attacks on both servers and desktops; Protects against entire classes of attacks including Port Scans, Buffer Overflows, Trojan Horses, Malformed Packets, malicious HTML requests and e-mail worms	
	• Stops new and unknown attacks without needing signature update, and reduces security management cost associated with deploying updates	
	• Scalable to 100,000 agents per management server	
	• Compliant with SDN/NAC Cisco Trust Agent. Integrated management with Cisco PIX, Cisco Secure IDS, and Cisco VPN security devices and built-in Cisco Secure VPN "Are You There" (AYT)	
Cisco Secure Access Control Server (ACS) for Windows	Provides a comprehensive identity networking solution and secure user experience for Cisco intelligent information networks. It is the integration and control layer among all enterprise users, administrators, and the resources of the network infrastructure	5-10
Cisco Secure Access Control Server (ACS) Solution Engine	A high-performance and highly scalable user and administrative access control solution that operates as a centralized RADIUS or TACACS+ server system in a turnkey security-hardened solution	5-12
Cisco Secure User Registration Tool (URT)	Identifies users within the network and creates user registration policy bindings that help support mobility and tracking:	5-13
	• Ensures that users are associated with their authorized subnet/VLAN	
	• Addresses the challenges associated with campus user mobility	
	• Supports Web-based authentication for Windows, Macintosh, and Linux client platforms	
	• Secure user access to the VLAN with MAC address-based security option	
	• Option to allow multiple users connected to a hub to access a VLAN served by a single switch port	

Product	Features	Page
CiscoWorks VPN/Security Management Solution	Combines general device management tools for configuring, monitoring, and troubleshooting enterprise networks with powerful security solutions for managing virtual private networks (VPNs), firewalls, and network and host-based intrusion detection systems (IDS). An integral part of the Cisco SAFE Blueprint for Enterprise, this bundle also delivers network device inventory, change audit and software distribution features. CiscoWorks VMS is organized into several functional areas: Firewall Management, IDS Management, network and host-based, VPN Router Management, Security Monitoring, VPN Monitoring, and Operational Management See Chapter 9-1—IOS Software & Network Management for more information on CiscoWorks VPN/Security Management Solution	9-12
CiscoWorks Security Information Management Solution and CiscoWorks Security Information Management Solution Engine	A solution that collects, analyzes, and correlates security event data from across the enterprise- letting you detect and respond to security events as they occur. • Event monitoring of multivendor security environments • Extensive reporting for operators and high-level administrators • Risk assessment information to understand overall vulnerability of critical network assets within the enterprise; Forensics tools to investigate attacks • Traffic utilization reports and graphs to understand changes in traffic patterns See Chapter 9-1—IOS Software & Network Management for more information on CiscoWorks Security Information Management Solution	9-14
Cisco IOS Firewall	• Tightly integrated with IOS VPN and advanced routing technologies • Application aware stateful packet inspection via context-based access control (CBAC) for TCP, UDP, SIP, Skinny, H.323 and others • Supports user authentication for https, ftp and telnet connections • URL filtering through router exclusive domains or use of external Websense and N2H2 servers • Inline intrusion prevention for real-time response to network attacks supporting 100 common attack signatures • Dynamic, network-to network, per-user authentication and authorization via TACACS+ and RADIUS	5-14
Cisco Security Router Bundles	Cisco 800, 1700, 1800, 2600, 2800 , 3700, 3800 7200 and 7301 Security Router Bundles with Enhanced Integrated Network Security. See individual product pages for more detail (page 1-1)	1-1
Cisco 800, 1700, 1800, 2600, 2800, 3700, 3800, 7200, and 7301	Wide variety of modular router platforms with options for Cisco IOS-based and hardware-enabled VPN, Cisco IOS Firewall, Intrusion Prevention, Network Admission Control (NAC), and security support.	1-1

Cisco PIX Security Appliance Series

The world-leading Cisco PIX® Security Appliance Series provides enterprise-class, integrated network security services including stateful inspection firewalling, protocol and application inspection, virtual private networking (VPN), in-line intrusion protection, rich multimedia and voice security in cost-effective, easy-to-deploy solutions. Ranging from compact, "plug-and-play" desktop firewalls for small offices to carrier-class gigabit firewalls for the most demanding enterprise and service-provider environments, Cisco PIX Security Appliances provide robust security, performance, and reliability for network environments of all sizes.

When to Sell

Sell This Product	When a Customer Needs These Features
PIX 501	• Small Office / Home Office desktop integrated security appliance • Up to 60 Mbps of firewall throughput • Up to 3 Mbps of 3DES and 3.4 Mbps of AES-256 IPsec VPN throughput[1] • Hardware VPN client (Easy VPN Remote) • VPN concentrator services (Easy VPN Server) for up to 10 remote users • Integrated four port 10/100 Mbps switch
PIX 506E	• Remote Office / Branch Office desktop integrated security appliance • Up to 100 Mbps of firewall throughput • Up to 16 Mbps of 3DES and 30 Mbps of AES-256 IPsec VPN throughput[1] • Hardware VPN client (Easy VPN Remote) • VPN concentrator services (Easy VPN Server) for up to 25 remote users • Maximum of two 10BASE-T Ethernet interfaces • OSPF dynamic routing support

Sell This Product	When a Customer Needs These Features
PIX 515E	• Small-to-Medium Business (SMB) integrated security appliance • Up to 190 Mbps of firewall throughput[1] • Up to 130 Mbps of 3DES/AES-256 VPN throughput[1] using hardware acceleration (integrated in select models, optional for others) • VPN concentrator services (Easy VPN Server) for up to 2,000 remote users • Up to six 10/100 FE interfaces • VLAN trunking (802.1q tag-based) and OSPF dynamic routing support • Active/standby firewall stateful failover support
PIX 525	• Enterprise-class integrated security appliance • Up to 330 Mbps of firewall throughput[1] • Up to 145 Mbps of 3DES and 135 Mbps of AES-256 VPN throughput[1] using hardware acceleration (integrated in select models, optional for others) • VPN concentrator services (Easy VPN Server) for up to 2,000 remote users • Gigabit Ethernet support; Up to eight 10/100 FE or three Gigabit Ethernet interfaces • VLAN trunking (802.1q tag-based) and OSPF dynamic routing support • Active/standby firewall stateful failover support
PIX 535	• Carrier class large enterprise and service provider firewall appliance • Up to 1.7 Gbps of firewall throughput[1] • Up to 425 Mbps of 3DES/AES-256 VPN throughput using hardware acceleration (integrated in select models, optional for others) • VPN concentrator services (Easy VPN Server) for up to 2,000 remote users • Gigabit Ethernet throughput; Up to ten 10/100 FE or nine Gigabit Ethernet interfaces • VLAN trunking (802.1q tag-based) and OSPF dynamic routing support • Redundant, hot-swappable power supplies • Active/standby firewall stateful failover support

1. At 1400-byte packets

Key Features

- Security—Purpose-built appliance with a proprietary, hardened operating system
- Performance—Stateful inspection firewall capable of up to 500,000 concurrent connections and 1.7 Gbps of throughput (at 1400-byte packets on Cisco PIX 535 Security Appliances)
- High availability—Award-winning, active/standby firewall stateful failover provides enterprise-class, cost-effective resiliency
- Virtual Private Networking (VPN)—Supports both standards-based IPsec and L2TP/PPTP-based VPN services
- Optional PIX VPN Accelerator Card+—Scales 3DES/AES-256 VPN throughput up to 495 Mbps, using specialized co-processors designed for accelerating cryptographic operations
- Free software Cisco VPN Client provides secure connectivity across a broad range of platforms including Windows, Mac OS X, Linux and Solaris
- Network Address Translation (NAT) and Port Address Translation (PAT)—Conceals internal IP addresses and expands network address space
- Denial-of-Service (DoS) Attack Protection—Protects the firewall, internal servers and clients from disruptive hacking attempts
- OSPF dynamic routing support for improved network reliability and performance
- VLAN trunking (802.1q tag) support for simplified deployment in switched network environments
- Multimedia and VoIP support for widely popular standards, H.232 v4, TAPI, JTAPI, RTSP, SIP, MGCP and SCCP
- Web-Based PIX Device Manager (PDM)—For simplified configuration, real-time and historical reports, performance baselines and security events information
- Auto Update, SSH, SNMP, TFTP, HTTPS, and telnet for remote management
- Support from two 10/100 Ethernet interfaces to up to nine Gigabit Ethernet interfaces

Competitive Products

- Check Point Software: FireWall-1 / VPN-1
- NetScreen: NetScreen Security Appliances
- Nokia: IP-Series Security Appliances
- SonicWALL: SonicWALL Security Appliances
- WatchGuard Technologies: Firebox-series and V-series Security Appliances

Specifications

Feature	PIX 501	PIX 506E	PIX 515E	PIX 525	PIX 535
Processor	133 MHz	300 MHz	433 MHz	600 MHz	1.0 GHz
RAM	16 MB	32 MB	32 or 64 MB	128 or 256 MB	512 MB or 1 GB
Flash Memory	8 MB	8 MB	16 MB	16 MB	16 MB
PCI Slots	None	None	2	3	9
Fixed Interfaces (Physical)	Four port 10/100 switch (inside), One 10Base-T Ethernet (outside)	Two 10Base-T Ethernet	Two 10/100 Fast Ethernet	Two 10/100 Fast Ethernet	None
Maximum Interfaces (Physical and Virtual)	Four port 10/100 switch (inside), One 10Base-T Ethernet (outside)	Two 10Base-T Ethernet or 2 VLANs	Six 10/100 Fast Ethernet (FE) or 8 VLANs	Eight 10/100 FE or GE or 10 VLANs	Ten-10/100 FE or GE or 24 VLANs
VPN Accelerator Card+ (VAC+) Option	No	No	Yes, integrated in select models	Yes, integrated in select models	Yes, integrated in select models
Failover Support	No	No	Yes, UR/FO models only	Yes, UR/FO models only	Yes, UR/FO models only
Size	Desktop	Desktop	1 RU	2 RU	3 RU

Selected Part Numbers and Ordering Information[1]

Cisco PIX Bundles

PIX-535-UR-BUN	PIX 535 Unrestricted Bundle (Chassis, unrestricted software, two 10/100 ports, VPN Accelerator Card+)
PIX-535-R-BUN	PIX 535 Restricted Bundle (Chassis, restricted software, two 10/100 ports)
PIX-535-FO-BUN	PIX 535 Failover Bundle (Chassis, failover software, two 10/100 ports, VPN Accelerator Card+)
PIX-525-UR-GE-BUN	PIX 525 Unrestricted GE Bundle (Chassis, unrestricted software, two GE ports, two 10/100 ports, VPN Acceleration Card+)
PIX-525-FO-GE-BUN	PIX 525 Failover GE Bundle (Chassis, failover software, two GE ports, two 10/100 ports, VPN Acceleration Card+)
PIX-525-UR-BUN	PIX 525 Unrestricted Bundle (Chassis, unrestricted software, two 10/100 ports, VPN Accelerator Card+)
PIX-525-R-BUN	PIX 525 Restricted Bundle (Chassis, restricted software, two 10/100 ports)
PIX-525-FO-BUN	PIX 525 Failover Bundle (Chassis, failover software, two 10/100 ports, VPN Accelerator Card+)
PIX-515E-UR-FE-BUN	PIX 515E Unrestricted Bundle (Chassis, unrestricted software, six 10/100 ports, VPN Accelerator Card+)
PIX-515E-FO-FE-BUN	PIX 515E Failover Bundle (Chassis, failover software, six 10/100 ports, VPN Accelerator Card+)
PIX-515E-UR-BUN	PIX 515E Unrestricted Bundle (Chassis, unrestricted software, two 10/100 ports, VPN Accelerator Card+)
PIX-515E-R-BUN	PIX 515E Restricted Bundle (Chassis, restricted software, two 10/100 ports)
PIX-515E-FO-BUN	PIX 515E Failover Bundle (Chassis, failover software, two 10/100 ports, VPN Accelerator Card+)
PIX-515E-R-DMZ-BUN	PIX 515E DMZ Bundle (Chassis, restricted software, three 10/100 ports)
PIX-506E-BUN-K9	PIX 506E 3DES/AES Bundle (Chassis, software, 3DES/AES license, two 10-BaseT ports)2
PIX-501-BUN-K9	PIX 501 10 User/3DES/AES Bundle (Chassis, SW, 10 user/3DES/AES license, 4 port 10/100 switch)
PIX-501-50-BUN-K9	PIX 501 50 User/3DES/AES Bundle (Chassis, SW, 50 user/3DES/AES license, 4 port 10/100 switch)
PIX-501-UL-BUN-K9	PIX 501 Unlimited User/3DES/AES Bundle (Chassis, SW, Unlimited Users 3DES/AES license, 4 port 10/100 switch)

Cisco PIX Interfaces and Cards

PIX-1GE-66	PIX 66-MHz Single-port Gigabit Ethernet interface card (multimode fiber, SC connector)
PIX-4FE-66	PIX 66-MHz Four-port 10/100 Fast Ethernet interface card, RJ45
PIX-1FE	PIX Single-port 10/100 Fast Ethernet interface card
PIX-VPN-ACCEL	PIX DES/3DES VPN Accelerator Card (VAC)
PIX-VPN-PLUS	PIX DES/3DES/AES VPN Accelerator Card+ (VAC+)

PIX Accessories

PIX-506E-PWR-AC	Redundant AC power supply for PIX 506E
PIX-515-PWR-DC	Redundant DC power supply for PIX 515/515E

1. This is only a small subset of all parts available via URL listed under "For More Information". Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the *Distribution Product Reference Guide* at: http://www.cisco.com/dprg (limited country availability).

For More Information

See the PIX Security Appliance Web site: **http://www.cisco.com/go/pix**

Cisco VPN 3000 Family

The Cisco VPN 3000 Series Concentrator is a best-in-class, remote-access VPN solution for enterprise-class deployment. A standards-based, easy-to-use VPN client and scalable VPN tunnel termination devices are included, as well as a management system that enables corporations to easily install, configure, and monitor their remote access VPNs. Remote connections can be established either from a SSL-capable Web browser or an installed VPN Client, allowing for maximum flexibility and application access without the need to deploy and manage multiple unique devices for secure corporate or partner application access. Incorporating the most advanced, high-availability capabilities with a unique purpose-built, remote-access architecture, it allows corporations to build high-performance, scalable, and robust VPN infrastructures to support their mission-critical, remote-access applications.

Unique to the industry, it is the only scalable platform to offer components that are field-swappable and can be upgraded by the customer. These components, called Scalable Encryption Processing (SEP/SEP-E) modules, enable users to easily add capacity and throughput.

The Cisco VPN 3000 Series Concentrator supports the widest range of connectivity options, including WebVPN (Clientless using a Web browser), the Cisco VPN Client, the Microsoft L2TP/IPSec, and Microsoft PPTP.

When to Sell

Sell This Product	When a Customer Needs These Features
VPN 3005 and 3015 Concentrators	Cisco VPN 3005 Concentrator • Designed for small to medium-sized organizations with bandwidth requirements up to full-duplex T1/E1 (4 Mbps maximum performance) with support for up to 200 simultaneous IPSec sessions or 50 simultaneous clientless sessions • Encryption processing is performed in software • Does not have built-in upgrade capability Cisco VPN 3015 Concentrator • Designed for small- to medium-sized organizations with bandwidth requirements up to full-duplex T1/E1 (4 Mbps maximum performance) and up to 100 simultaneous IPSec sessions or 75 simultaneous clientless sessions • Encryption processing is performed in software • Field-upgradable to the Cisco VPN 3030 and 3060 models
VPN 3020 Concentrator	• Designed for medium to large organizations with bandwidth requirements from full T1/E1 through T3/E3 (50 Mbps maximum performance) with support for up to 750 simultaneous IPSec sessions or 200 simultaneous clientless sessions • Specialized SEP modules (SEP-E) perform hardware-based acceleration • Cannot be upgraded to other products in the family • Redundant and nonredundant configurations are available

Sell This Product	When a Customer Needs These Features
VPN 3030 and 3060 Concentrators	Cisco VPN 3030 Concentrator
	• Designed for medium to large organizations with bandwidth requirements from full T1/E1 through T3/E3 (50 Mbps maximum performance) with support for up to 1,500 simultaneous IPSec sessions or 500 simultaneous clientless sessions
	• Specialized SEP modules perform hardware-based acceleration
	• Field upgradeable to the Cisco VPN 3060
	• Redundant and nonredundant configurations are available
	Cisco VPN 3060 Concentrator
	• Designed for large organizations demanding the highest level of performance and reliability, with high-bandwidth requirements from fractional T3 through full T3/E3 or greater (100 Mbps maximum performance) with support for up to 5,000 simultaneous IPSec sessions or 500 simultaneous clientless sessions
	• Specialized SEP modules perform hardware-based acceleration
	• Redundant and nonredundant configurations are available
VPN 3080 Concentrator	• Optimized to support large enterprise organizations that demand the highest level of performance combined with support for up to 10,000 simultaneous IPSec sessions or 500 simultaneous clientless sessions
	• Specialized SEP modules perform hardware-based acceleration
	• Available in a fully redundant configuration only
VPN Client	• Simple to deploy and operate
	• Used to establish secure, end-to-end encrypted tunnels to the Cisco VPN 3000 Concentrator and other Cisco Easy VPN compliant devices
	• Thin design, IPSec-compliant implementation is provided
	• Licensed for an unlimited number of users
	• Client can be pre-configured for mass deployments and the initial logons require very little user intervention
	• VPN access policies are created and stored centrally and pushed to the client when a connection is established
	• Provided at no charge, installs on PCs and is available for Windows, Mac OS X and Linux Intel/Solaris UltaSparc environments
VPN 3002 Hardware Client	• Emulates the software client in hardware
	• Ideal for mixed operating system environments and where a corporation does not own/control remote PCs or for very large applications requiring large number of devices due to ease of deployment, upgradability & scalability

Key Features

- Cisco VPN 3000 Concentrators Series
  - Support for industry standard IPSec DES/3DES/AES and Cisco IPSec/NAT for VPN Access through Port Address Translation firewalls
  - Unlimited-use license for Cisco VPN Client distribution included at no cost with multiple OS support including Windows, MAC OS X, Linux and Solaris; also integrates with Zone Alarms personal firewall
  - Supports standard authentication: RADIUS, SDI Tokens, and Digital Certificates
  - VPN load balancing allows for multiple units to cluster as a single shared pool
- Cisco VPN 3002 Hardware Client supports up to 253 users/stations per VPN 3002
  - Works with most operating systems including Windows, Linux, Solaris, and MAC OS X
  - Auto-upgrade capability automates upgrades with no user intervention required
  - Client technology employs push policy and automatic address assignment from the central site concentrator, enabling virtually unlimited scalability

Competitive Products

- Nortel: Contivity products (IPsec)
- Juniper (Neoteris): SSL VPN Secure Access products
- Juniper (Netscreen): LAN to LAN environments
- Nokia

Specifications

Cisco VPN 3000 Series Concentrators

Feature	VPN 3005	VPN 3015	VPN 3020	VPN 3030	VPN 3060	VPN 3080
Simultaneous IPSec Users	200	100	750	1500	5000	10000
Simultaneous WebVPN (Clientless) Users	50	75	200	500	500	500
Encryption Throughput	4 Mbps	4 Mbps	50 Mbps	50 Mbps	100 Mbps	100 Mbps
Encryption Method	Software	Software	Hardware	Hardware	Hardware	Hardware
Encryption (SEP) Module	0	0	1	1	2	4
Redundant SEP	No	No	Optional	Optional	Optional	Yes
Expansion Slots	0	4	1 (Redundant)	3	2	N/A
Upgradeable	No	Yes		Yes	N/A	N/A
Memory	32/64 MB (fixed)	128 MB	256 MB	128-512 MB	256/512 MB	256/512MB
Hardware Configuration	1U, Fixed	2U, Scalable	Fixed 2U	2U, Scalable	2U, Scalable	2U
Power Supply	Single	Single, with a dual option	Single, with a dual option	Single, with a dual option	Single, with a dual option	Dual
Client License	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
LAN-to-LAN Connections (internal user database)	100	100	250	500	1000	1000
Dimensions (HxWXD)	1.75 x 17.5 x 11.5 in.	3.5 x 17.5 x 14.5 in.	3.5 x 17.5 x 14.5 in.	3.5 x 17.5 x 14.5 in.	3.5 x 17.5 x 14.5 in.	3.5 x 17.5 x 14.5 in.

Cisco VPN 3002 Hardware Client

Feature	VPN 3002 Hardware Client
Hardware Processor	Motorola PowerPC processor; Dual flash image architecture
Network Interfaces	CPVN3002-K9: One Public 10/100Mbps RJ-45 Ethernet Interface and One Private Port 10/100Mbps RJ-45 Ethernet Interface
	CVPN3002-8E-K9: One Public 10/100Mbps RJ-45 Ethernet Interface and Eight Private Port 10/100Mbps RJ-45 Ethernet Interfaces via AUTO-MDIX switch
Physical Dimensions	1.967 x 8.6 x 6.5 in. (5 x 8.6 x 16.51 cm)
Power Supply	External AC Operation: 100-240V at 50/60 Hz with universal power factor correction; 4 foot cord included and international "pigtail" power cord selection
Tunneling Protocol Support	IPsec with IKE key management
Monitoring & Configuration	Event logging; SNMP MIB-II support
	Embedded management interface is accessible via console port or local web browser; SSH/SSL
Encryption Algorithms, Key Management & Authentication Algorithms	56-bit DES (IPsec); 168-bit Triple DES (IPsec); AES 128 & 256-bit (IPsec)
Authentication and Accounting Servers	Support for redundant external authentication servers including RADIUS
	Microsoft NT Domain authentication, X.509v3 Digital Certs (PKC7-PKCS10)
Configuration Modes	Client Mode—acts as client, receives random IP address from Concentrator Pool; Uses NAPT to hide stations 3002; Network behind 3002 is unroutable; few configuration parameters
	Network Extension Mode—acts as site-to-site device; Uses NAPT to hide stations only to Internet (stations visible to central site); Network behind 3002 is routable; additional configuration parameters

Selected Part Numbers and Ordering Information[1]

Cisco VPN 3000 Concentrator

CVPN3005-E/FE-BUN	VPN3005:Chassis, 2FE, 200 user, client, SW, US PWR
CVPN3015-NR-BUN	VPN3015:Chassis, 3FE, 100 user, client, SW, US PWR
CVPN3020E-NRBUN-K9	VPN3020:Chassis, 3FE, SEP-E, 750 user, client, SW, US PWR
CVPN3020E-RDBUN-K9	VPN3020:Chassis, 3FE, 2SEP-E, 750 user, client, SW, 2 US PWR
CVPN3030E-NRBUN-K9	VPN3030:Chassis, 3FE, SEP-E, 1500 user, client, SW, US PWR
CVPN3030E-RDBUN-K9	VPN3030:Chassis, 3FE, 2SEP-E, 1500 user, client, SW, 2 US PWR
CVPN3060E-NRBUN-K9	VPN3060:Chassis, 3FE, 2SEP-E, 5k user, client, SW, US PWR
CVPN3060E-RDBUN-K9	VPN3060:Chassis, 3FE, 4SEP-E, 5k user, client, SW, 2 US PWR
CVPN3080E-RDBUN-K9	VPN3080:Chassis, 3FE, 4SEP-E, 10k user, client, SW, 2 US PWR

Cisco VPN 3000 Series Upgrades

CVPN3000-UKITA-K9=	1SEP-E,1PS,512MB memory,4.0 OS and boot,client SW
CVPN3000-UKITB-K9=	2SEP-E,1PS,512MB memory,4.0 OS and boot,client SW
CVPN3000-UKITC-K9=	3SEP-E,1PS,512MB memory,4.0 OS and boot,client SW
CVPN3000-UKITD-K9=	4SEP-E,1PS,512MB memory,4.0 OS and boot,client SW

Cisco VPN 3000 Series Accessories

CVPN3000-PWR=	Cisco VPN 3000 Concentrator Power Supply
CVPN30XX-MEMKITK9=	VPN 3030, 3060, 3080: 2x256MB RAM

Cisco VPN 3000 Series Basic Maintenance

CON-SNT-PKG4	SMARTnet Maintenance for Cisco CVPN3005-E/FE-BUN
CON-SNT-PKG8	SMARTnet Maintenance for Cisco CVPN3015-NR-BUN
CON-SNT-PKG11	SMARTnet Maintenance for Cisco CVPN3030-NR-BUN
CON-SNT-PKG13	SMARTnet Maintenance for Cisco CVPN3030-RED-BUN
CON-SNT-PKG14	SMARTnet Maintenance for Cisco CVPN3060-RED-BUN

Cisco VPN Client

CVPN-CLIENT-K9=	Cisco VPN Client CD (included with Concentrator purchase)

For More Information

See the Cisco VPN 3000 series Web site: **http://www.cisco.com/go/vpn3000**

Cisco Security Router Bundles with Integrated Network Security

The Cisco Security Router Bundles are based on the Cisco 800, 1700, 1800, 2600XM, 2691, 2800, 3700, 3800 7200 and 7301 router platforms. They include the Entry Security bundles, Enhanced Security bundles for added performance and scale, and V3PN bundles for combined Security and IPCommunications.

Key Features

- Single part number when ordering a Cisco router with all the necessary Security components at a reduced price compared to ordering each component separately
- All Security bundles come pre-installed with Router and Security Device Manager (SDM) for fast and easy deployment based on Cisco TAC and ICSA Labs recommended router security configurations
- Offers bundled Cisco IOS since Cisco 800 Series, 1711and 1712 offer embedded VPN acceleration
- Cisco 1700, 2600XM, 2691, 3700, 7200 and 7301 bundles include the selected router platform, a VPN hardware card, additional memory, and the Cisco IOS to run IPSec 3DES or AES encryption
- Cisco 2600XM, 2800, 3700, and 3800 Series now have Advanced Security Network Modules available for ULR Filtering and hardware-based IDS(Intrusion Detection System)
- For modular platforms, each Security bundle has optional modules

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco VPN Security Router Bundles	• Combatting worms, viruses or threats from every gateway to the network (NAC, firewall, IPS)
	• Deploying VPN on routers and want to have future option for VPN
	• Planning to use the Internet for remote business communications (remote access VPN)
	• When migrating from leased lines to VPN
	• Need encryption to protect customer data (i.e HIPAA, Sarbanes-Oxley)
	• Needs to integrate Voice and VPN Services (V3PN)
	• New Integrated Services Routers (Cisco 1800, 2800, and 3800) have embedded VPN acceleration, so corresponding Security bundles are necessary to enable the 3DES or AES encryption functionality

Specifications

Feature	Cisco VPN Security Router Bundles
All Bundles Include	Network Admission Control (NAC) Firewall with IPS; GRE and IPSec; High Availability/Failover; VPN QoS; AES in Hardware (excluding C1700 Bundles)
IPPCP Compression	Software: C800, C1700 Bundles
	Hardware: Cisco 1800 bundles, C2600XM, C2691-VPN, Cisco 2800 bundles, C3725-VPN, C3745-VPN, Cisco 3800, 7200, 7301 Bundles
Max Tunnel	C800 - 10, C1700: 100; Cisco 1800: 800,C2600XM, C2691-VPN: 800; Cisco 2800: 1500; C3725-VPN, C3745-VPN: 2000; Cisco 3800: 2500; 7200/7301 Bundles: 5000
Firewall Performance	C800 - 10Mbps, C1700: 20Mbps; Cisco 1800: 125 Mbps,C2600XM: 35Mbps; C2691-VPN: 197Mbps; Cisco 2800: 530Mbps; C3725-VPN, C3745-VPN: 197 Mbps; Cisco 3825: 855Mbps; Cisco 3845:1 Gbps, 7200/7301 Bundles: 1Gbps

For More Information

See Chapter 1: Routing for more details.

Cisco Security Agent

The next-generation Cisco Security Agent network security software provides threat protection for server and desktop computing systems, also known as "endpoints." The Cisco Security Agent goes beyond conventional host and desktop security solutions by identifying and preventing malicious behavior that threaten enterprise networks and applications before it can occur. It aggregates and extends multiple endpoint security functions by providing host intrusion prevention, distributed firewall, malicious mobile code protection, operating system integrity assurance, and audit log consolidation all within a single agent package.

The Cisco Security Agent analyzes behavior rather than relying on signature matching, its solution provides robust protection with reduced operational costs. It provides patch relief to reduce the system administration workload allowing companies to wait for "roll-ups" and Service Packs, which come better qualified from the vendor. Testing and implementation of updates can be scheduled without undue change control interruption. Fewer updates reduce the cost of ownership.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco Security Agent	• Host intrusion protection, distributed firewall, malicious mobile code protection, operating system hardening, file integrity and/or audit log consolidation. The Cisco Security Agent provides all of these features in one integrated package
	• Protection against both known and unknown attacks
	• Protection for servers and/or desktops/laptops
	• A solution that is scalable to protect thousands of servers and desktops for large enterprise deployments
	• Provides endpoint protection enabling businesses to participate in e-commerce securely and take advantage of the Internet economy

Key Features

- Provides industry-leading protection for Unix and Windows servers
- Multiple security functions in a single agent
- Open, extensible architecture offers the capability to define and enforce security according to corporate policy
- "Zero Update" prevention for known and unknown attacks
- Integrates with Cisco Network Security Products
- Provides application inventory and use tracking, hotfix and Service Pack status checking, and antivirus DAT version check for Symantec and McAfee antivirus agents
- A key component of the SAFE blueprint for secure e-business

Competitive Products

- Internet Security Systems (ISS)
- Symantec: Intruder Alert
- Enterasys: Squire
- Sana Security: Primary Response
- NAI: Entercept
- NFR (Centrax)

Specifications

Feature	Cisco Security Server Agent	Cisco Security Desktop Agent	Cisco Security Agent Manager
Platforms	Windows 2000 Server and Advanced Server (up to Service Pack 3)	Windows NT v4.0 Workstation (Service Pack 5 or later)	Microsoft Windows 2000 Server and Advanced Server (up to SP 2)
	Windows NT v4.0 Server and Enterprise Server (Service Pack 5 or later)	Windows 2000 Professional (up to Service Pack 3)	
	Solaris 8 SPARC architecture (64-bit kernel)	Windows XP Professional (up to Service 1)	

Selected Part Numbers and Ordering Information[1]

Cisco Security Agent Options

CSA-SRVR-K9=	Cisco Security Server Agent (Win + Sol), 1 Agent
CSA-B10-SRVR-K9	Cisco Security Server Agent (Win + Sol), 10 Agent Bundle
CSA-B25-SRVR-K9	Cisco Security Server Agent (Win + Sol), 25 Agent Bundle
CSA-B50-SRVR-K9	Cisco Security Server Agent (Win + Sol), 50 Agent Bundle
CSA-B100-SRVR-K9	Cisco Security Server Agent (Win + Sol), 100 Agent Bundle
CSA-B25-DTOP-K9	Cisco Security Desktop Agent (Win + Sol), 25 Agent Bundle
CSA-B100-DTOP-K9	Cisco Security Desktop Agent (Win + Sol), 100 Agent Bundle
CSA-B250-DTOP-K9	Cisco Security Desktop Agent (Win + Sol), 250 Agent Bundle
CSA-B500-DTOP-K9	Cisco Security Desktop Agent (Win + Sol), 500 Agent Bundle
CSA-B500-SRVR-K9	Cisco Security Server Agent (Win + Sol), 500 Agent Bundle
CSA-B1000-DTOP-K9	Cisco Security Desktop Agent (Win + Sol), 1000 Agent Bundle
CSA-B5000-DTOP-K9	Cisco Security Desktop Agent (Win + Sol), 5000 Agent Bundle
CSA-PROFILER-K9	Cisco Security Agent Profiler

Note **Export Considerations:** The Cisco Security Agent is subject to export controls. Please refer to the export compliance Web site at **http://www.cisco.com/wwl/export/crypto** for guidance. For specific export questions, please contact **export@cisco.com**.

For More Information

See the Cisco Security Agent Web site: **http://www.cisco.com/go/csa**

Cisco Secure Access Control Server (ACS) for Windows

Cisco Secure ACS is a highly scalable, high-performance access control server that operates as a centralized RADIUS server or TACACS+ server. It extends access security by combining authentication, user or administrator access, and policy control from a centralized identity networking solution, allowing greater flexibility and mobility, increased security, and user productivity gains. It reduces the administrative and management burden involved in scaling user and network administrative access to your network. By using a central database for all user accounts, it centralizes the control of all user privileges and distributes them to hundreds or thousands of access points throughout the network. As an accounting service, the Cisco Secure ACS reduces IT operating costs by providing detailed reporting and monitoring capabilities of network users' behavior and by keeping a record of every access connection and device configuration change across the entire network. The Cisco Secure ACS supports a wide array of access connection types, including wired and wireless LAN, dialup, broadband, content, storage, voice over IP, firewalls, and VPNs.

The Cisco Secure ACS is a key component of the Cisco Identity-Based Networking Services (IBNS) architecture and of Cisco Network Admission Control (NAC).

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco Secure Access Control Server (ACS) for Windows	• Centrally manage who can log in to the network from wired or wireless connections • Privileges each user has in the network • Accounting information recorded in terms of security audits or account billing • What access and command controls are enabled for each configuration administrator • Virtual VSA for Aironet rekey • Secure server authentication and encryption • Simplified firewall access and control through Dynamic Port Assignment • Same User AAA services

Key Features

- Cisco NAC support—Using policies that you configure, it evaluates the credentials sent to it by Cisco Trust Agent, determines the state of the host, and sends the AAA client ACLs that are appropriate to the host state; records the results of policy evaluation for use with your monitoring system
- Supports the new, publicly accessible IEEE 802.1X EAP type developed by Cisco to support customers who cannot enforce a strong password policy and who wish to deploy an 802.1X EAP; Does not require digital certificates, and supports a variety of user and password database types, password expiration and change, and is flexible, easy to deploy, and easy to manage
- Downloadable IP access control lists (ACLs)—Extends per-user ACL support to any Layer 3 network device that supports this feature; Allows for custom defined sets of ACLs that can be applied per user or per group
- Certification Revocation List (CRL) comparison for EAP-Transport Layer Security (TLS) authentication—Adds support for certificate revocation using the X.509 CRL profile; Cisco Secure ACS fails the authentication and denies access to the user if the certificate presented by the user during an EAP-TLS authentication is present in the retrieved CRL
- Machine Access Restrictions (MARs) that complement 802.1X machine authentication—Ability to use MARs to control authorization of EAP-TLS and Microsoft Protected Extensible Authentication Protocol (PEAP) users who authenticate with a Windows external user database
- Network access filtering (NAF) as a new shared profile component—Introduces granular application of network access restrictions and downloadable ACLs, both of which previously supported only the use of the same access restrictions or ACLs to all devices
- Allows replication of the user and group databases separately

Competitive Products

- Funk: Steel Belted RADIUS
- Lucent/Avaya: Security Management Server (LSMS)
- Nortel: Preside RADIUS Server (OEM of Funk product)

Specifications

Feature	Cisco Secure Access Control Server (ACS) for Windows
Hardware	• Pentium processor, 550 MHz or faster • 256 MB RAM • 250 MB free disk space, more if you are running your database on the same device • Minimum resolution of 800 x 600 with 256 colors

Selected Part Numbers and Ordering Information[1]

Cisco Secure Access Control Server (ACS) for Windows

CSACS-3.3-WIN-K9	Cisco Secure ACS 3.3 for Windows
CSACS-3.3-WINUP-K9	Upgrade to CSACS 3.3 for Windows from ACS versions 1.x, 2.x, and Cisco Secure ACS for Unix version 2.x
CSACS-3.3-WINMR-K9	Minor update kit for customers on ACS 3.x that do not have SAS support contracts; Includes minor update release for ACS 3.3

1. This is only a small subset of all parts available via URL listed under "For More Information". Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the *Distribution Product Reference Guide* at: http://www.cisco.com/dprg (limited country availability).

For More Information

See the Cisco Secure ACS for Windows Web site: **http://www.cisco.com/go/acs**

Cisco Secure Access Control Solution Engine

The Cisco Secure ACS Solution Engine is a highly secure, OS-independent, and dedicated platform that offers a highly manageable access control solution with an increasingly reduced setup and troubleshooting time. It provides plug-and-play deployment, a highly reliable authentication, authorization, and accounting (AAA) solution, and increased total cost of ownership (TCO) protection. A Cisco Secure ACS remote agent is available with each Cisco Secure ACS Solution Engine to enable remote logging and Windows authentication.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco Secure Access Control Solution Engine	• Need a dedicated, security-hardened, application-specific appliance package • Simplified day-to-day management with overall reliability and security of the Cisco Secure ACS service • Suitable alternative for Cisco Secure ACS UNIX customers not willing to install or manage Cisco Secure ACS on the Windows OS

Key Features

- Dedicated to run only the Cisco Secure ACS service preventing any appliance-based OS changes, additions, or configuration modifications
- A serial console interface is provided for initial configuration, subsequent management of IP connections, access to the Cisco Secure ACS HTML interface, and applying upgrade and recovery procedures
- Solution Engine-specific management tools provide generic appliance management capabilities including backup, recovery, software upgrades, monitoring, maintenance, and troubleshooting functions
- Provides authentication against Windows domains and remote logging capabilities of user accounting records
- A packet-filtering service to block traffic on all but the necessary Cisco Secure ACS-specific TCP and User Datagram Protocol ports
- Preinstalled, standalone Cisco Security Agent helps protects Cisco Secure ACS Solution Engine from day-zero attacks
- Built-in NTP functions to maintain network timing synchronization and consistency with other Cisco Secure ACS appliances or network devices

Specifications

Feature	Cisco Secure Access Control Solution Engine[1]
Processor speed	Pentium IV, 3.2 GHz
Memory	1 GB RAM
Hard Drive	80 GB free disk space
Interfaces	2 built-in 10/100 Ethernet controllers and 1 floppy disk drive

1. Specific to Cisco ACS Solution Engine. Additional features are found under Cisco Secure Access Control Server (ACS) for Windows, page 5-10

Selected Part Numbers and Ordering Information[1]

Cisco Secure ACS Solution Engine

CSACSE-1112-K9	Cisco Secure ACS 3.3 Solution; includes HW and SW
CSACSE-1112-UP-K9	Upg. for ACS 3.X open server or 1111 to Cisco 1112 w/ACS 3.3
CSACSE-3.3-SWMR-K9	Minor Release update for CSACS Sol. Eng. SW 3.3-Jul04

1. This is only a small subset of all parts available via URL listed under "For More Information". Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the *Distribution Product Reference Guide* at: http://www.cisco.com/dprg (limited country availability).

For More Information

See the Cisco Secure ACS Solution Engine Web site:
http://www.cisco.com/en/US/products/sw/secursw/ps5338/index.html

Cisco Secure User Registration Tool

Cisco Secure URT is a virtual LAN (VLAN) assignment service that provides LAN security by actively identifying and authenticating users and then associating them only to the specific network services and resources they need through dynamic VLAN assignments to Cisco Catalyst® Switch networks. URT v2.5 introduces many innovative features, including a Web-based logon from Windows, Macintosh, and Linux clients, RADIUS and Lightweight Directory Access Protocol (LDAP) authentication, and a secure link between the client and the VLAN Policy Server (VPS). It also includes a security feature based on the Media Access Control (MAC) address that prevents users from accessing the network if they are not using authorized machines. Web based LAN authentication allows for user mobility within the LAN environment.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco Secure User Registration Tool (URT)	• Web-based LAN authentication for Windows, Macintosh, and Linux client platforms—ideal for mobile users within the LAN environment • Extended security to protect user access to the logon VLAN from unregistered PCs through MAC-based security option • RADIUS authentication and accounting support • Multiple user access per port

Key Features

- Web Client Logon Interface—Supports customizable Web-based authentication for Windows, Macintosh, and Linux client platforms
- MAC-Based Security Option—Provides extended security to protect user access to the logon VLAN from unregistered PCs
- RADIUS Authentication and Accounting Support—RADIUS authentication is offered for Web logon
- Secure Link Between Cisco Secure URT Client and VPS Server—Security authentication and data encryption have been added to URT v2.5 to enable a more secure connection from the user
- LDAP Support (Active Directory and NDS directories)—Cisco Secure URT v2.5 supports Windows' Active Directory and Novell's NDS LDAP servers
- Multiple Users Per Port—Previous versions of Cisco Secure URT support only a single user logon on a single port
- Display of Windows NT Groups—The URT Administrator interface is enhanced to display the users belonging to a Windows NT group
- MAC Address Events History—With URT v2.5 MAC-address-based logon/logoff events are added as an option and reported to the history events tool

Specifications

Feature	Cisco Secure User Registration Tool (URT)
Hardware	Windows 2000 (SP2) server, professional, and Windows XP Professional-Min H/W (Pentium III, 512MB DRAM, 65 MB of disk space)
Browser for Web Login	Netscape version 4.79 and 6.2; IE version 5.5 (SP2) or 6.0
Client Software Requirements	Windows 98 (2ndE), Windows NT4 Workstation/Server (SP6A), Windows 2000 (SP2) Professional/server, Windows XP Professional, Windows XP Home (Web Client Only), Mac OS 10.1 (Web client only), Linux Redhat/ SuSE/ Mandrake/ VA (Web Client only)-Min H/W for Web client (Pentium II, 256MB DRAM, 65 MB of disk space), Min H/W for traditional client (Pentium II, 64MB DRAM, 1MB of disk space)
Supported Cisco Products (latest tested version)	1900 series (1912, 1924), v9.00.05; C2800 series (2822, 2828), v9.00.05; C2900XL series (2908XL, 2916XL, 2912XL, 2912LRE-XL, 2924XL, 2924LRE-XL), v12.0(5)WC3b; C2948GL3 series (2948GL3, 4232) v12.0(18)W5(22b); C2950 series, v12.1.6.EA2c; C3500XL series (3508XL, 3512XL, 3524XL, 3548XL, 3550XL), v12.0(5)WC3b; C3550 series, v12.1.8.EA1c; C4000 series (4003, 4006, 4912g), v7.1(2); C5000 series (2900, 2926, 2948, 5000, 5002, 5500, 5505, 5509), v6.3(5); C6000 series (6006, 6009, 6506, 6509, 6513), v7.1(3)

Selected Part Numbers and Ordering Information[1]

Cisco Secure User Registration Tool (URT)

CSURT-1102-K9	Starter Kit: includes one (1) User Registration Tool 2.5 Software license, and one (1) Cisco 1102 VLAN Policy Server (VPS) appliance
URT-1102-HW-K9	Hardware Only; Cisco 1102 VPs appliance; additional appliance needed for backup, use in distributed deployments, or deployments requiring Web logon capabilities
CSURT-2.5-SWMR-K9	Minor update kit for customers on URT 2.x that do not have SAS support contracts; Includes minor update release for URT 2.5

1. This is only a small subset of all parts available via URL listed under "For More Information". Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco Secure User Registration Tool Web site: **http://www.cisco.com/go/urt**

Cisco IOS Firewall

The Cisco IOS Firewall enriches Cisco IOS Software security capabilities, integrating robust firewall functionality and intrusion detection for every network perimeter. When combined with Cisco IOS IPSec software and other Cisco IOS Software-based technologies such as L2TP tunneling and quality of service (QoS), it provides a complete, integrated virtual private network solution. Because it is available for a wide range of Cisco routers, it gives customers the flexibility to choose a solution that meets their bandwidth, LAN/WAN density, and multiservice requirements, while benefiting from advanced security.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco IOS Firewall	• An integrated stateful firewall solution with powerful security and multiprotocol routing all on the same platform
	• Scalability options from the Cisco 800 up to the Cisco 7500 and the Catalyst 6000
	• Low cost solution that leverages existing infrastructure
	• For secure extranet and intranet perimeters and Internet connectivity for branch and remote offices
	• Secure remote access or data transfer via a Cisco IOS Software-based VPN solution
	• Real-time (inline) integrated Cisco IOS Intrusion Prevention System (IPS) to complement firewall or existing IDS (Cisco Secure IDS) solutions
	• Security and access to the network on a per-user basis

Key Features

- Context-based access control (CBAC) provides secure, stateful, application-based packet inspection, supporting the latest protocols and advanced applications
- Cisco IOS Inline Intrusion Prevention for real-time monitoring, interception, and response to network misuse for over 740 attack signatures
- Supports URL Filtering either local on the router through exclusive domains as well as use of external Websense and N2H2 servers.
- Dynamic, per-user authentication/authorization for LAN, WAN, and VPN clients
- Authentication proxy for https, ftp and telnet connections
- Supports Cisco Router and Security Device Manager (SDM)
- Graphical configuration and management via the VPN/Security Management Solution (VMS) and the IP Solution Center (ISC)
- Provides strong perimeter security for a complete Cisco IOS Software-based VPN solution, including IPSec, QoS, and tunnelling

Competitive Products

- Nortel: BaySecure Firewall-1
- Checkpoint, Nokia, Netscreen, etc

Specifications

Feature	Cisco IOS Firewall
Supported Network Interfaces	All network interfaces on supported platforms
Supported Platforms	Cisco 1720, 1800, 2600/2600XM, 2800, 3700, 3800, 7100, 7200, and 7301 series router platforms (supports full feature set)
	Cisco 800, UBR900, 1600, and 2500 series router platforms include all firewall features with exception of intrusion detection/prevention and authentication proxy
Simultaneous Sessions	No maximum; dependent on platform, network connection, and traffic
Cisco IOS Firewall Performance	C800 - 10Mbps, C1700: 20Mbps; Cisco 1800: 125 Mbps,C2600XM: 35Mbps; C2691-VPN: 197Mbps; Cisco 2800: 530Mbps; C3725-VPN, C3745-VPN: 197 Mbps; Cisco 3825: 855Mbps; Cisco 3845:1 Gbps, 7200/7301 Bundles: 1Gbps

Part Numbers and Ordering Information

For Cisco IOS Images containing firewall (FW) and intrusion prevention (IPS) capabilities, see individual product pages of supported platforms and the Cisco IOS Feature Navigator at http://www.cisco.com/go/fn (CCO login required) for part numbers and more info.

For More Information

See the Cisco IOS Firewall Feature Set Web site: **http://www.cisco.com/go/firewall**

Cisco IOS Firewall

Content Networking

Content Networking at a Glance

Product	Features	Page
Cisco Content Engine 500 Series	Content services edge delivery platform for Enterprise networks	6-2
	• Functions as edge node device in an Application and Content Networking (ACN) system	
	• Responsible for delivery of cached or distributed content to the end-user	
	• Enables customers to rapidly deliver strategic applications to branch personnel including web application and content acceleration, content filtering and business video	
	• Lays the foundation for advanced services such as e-learning and point of sale video delivery.	
Cisco Content Engine 7300 Series	Content services platform for Enterprise data center and Service Provider networks	6-2
	• Offers premium hosting services	
	• Caching capabilities optimize Web site performance and WAN bandwidth utilization	
	• Offers transparent and Internet proxy caching, Content Filtering and ECDN capabilities in a single platform	
	• Accelerates both HTTP and streaming media file formats	
Content Engine Network Modules	Content services edge delivery network module for 2600, 3600, 3700 branch routers	6-2
	• Functions as edge node device in an Application and Content Networking (ACN) system	
	• Enables delivery of new applications and services via a Cisco branch router with no performance degradation of core routing services	
	• Allows rapid delivery of strategic applications to branch personnel including web application and content acceleration, content filtering and business video	
Cisco 11500 Series Content Services Switches	• Provides an intelligent, distributed architecture to scale for today's e-business infrastructure	6-4
	• Offers Adaptive Session Redundancy (ASR)—a new industry standard in stateful failover	
	• Delivers the greatest flexibility of any content switch in its class for customizing combinations of ports, performance, and services	
Cisco Content Distribution Manager (CDM)	Content networking policy and management device	6-5
	• Central control over acquisition and distribution of content in the network, including live video, video on demand, and software updates	
	• Web-based GUI provides integrated management over caching and content delivery functions such as multicast replication, intelligent cache bypass and bandwidth management	
	• Roles based access control securely enables multiple administrators and content publishers across the organization	
Cisco Content Router	• Integrated global load balancing solution for content delivery networks	6-7
	• Uses HTTP to redirect a client to the best site on the Internet based on network delay	
	• Transparently redirection that works with any IP application	
	• Extremely fast site-selection algorithm is optimized for high performance Web-style transactions	
Content Switching Module (CSM) for the Catalyst 6500 Series Switches	High performance Content Switching line card for Catalyst 6500	6-8
	• L4 and L7, Firewall, VPN, Cache and Server load balancing	
	• Intelligently balances client traffic across multiple devices	
	• Full State and Sticky State redundancy; Full Regular Expression support	
Cisco SSL Module for Catalyst 6500	• Offloads SSL encryption and decryption	6-9
	• Scalable performance	
	• Stickyness	
Cisco 11000 Series Secure Content Accelerator (SCA 11000)	• Offloads SSL encryption/decryption from Web servers	6-10
	• Supports 200 new SSL connections and 900 sustained SSL sessions per second	
	• Interoperates with the CSS 11000 for intelligent load balancing of SSL traffic	
Cisco DistributedDirector	• Solves distributed server site selection problems. Enables a set of distributed servers to be seen as a single virtual server	6-11
	• Uses DNS to redirect a client to the best site on the Internet based on a variety of options	
	• Configurable as authoritative Domain Name Services (DNS) caching name server and/or HTTP Session Redirector on a per-domain basis	
Cisco GSS 4480 Global Site Selector	• Delivers global load balancing for multiple data centers	6-12
	• Offloads Domain Named System (DNS) servers by doing DNS resolution	
	• Scales to support hundreds of data centers or server load balancers (SLBs)	

Content Networking Overview

Cisco Content Networking solutions are designed to optimize the delivery of content to end users. To accomplish this, Cisco offers solutions for both data center and edge delivery with industry-leading products in both categories.

In the data center, Cisco Content Switching, or L4-7 Switching, solutions optimizes a network to dynamically enable faster responses to Web requests and decrease network bandwidth congestion. Content switching, or intelligent load balancing, insures high levels of content availability and security, and leverages investment in Cisco IP infrastructure.

Cisco's Application and Content Networking (ACN) System allows enterprises to accelerate mission critical web applications such as Siebel and SAP, block viruses and inappropriate web sites and deliver business video, while laying the foundation for advanced services such as e-learning and point of sale video delivery.

Cisco Content Engines (CE)

Within Cisco's content-networking solutions portfolio, the Cisco Application and Content Networking System (ACNS) Software enables a variety of services that optimize delivery of Web applications and content from the network edge to ensure enhanced speed, availability, and performance for users. ACNS Software combines the technologies of transparent caching and enterprise content-delivery network (ECDN) for accelerated delivery of Web objects, files, and streaming media from a single intelligent edge appliance, Cisco CE.
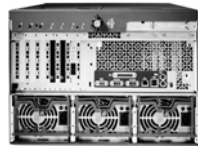
The Cisco ECDN solution provides a platform that delivers immediate benefits from entry-level applications such as content and business application acceleration and URL filtering, while laying the foundation for advanced services such as business video and e-learning.

When to Sell

Sell This Product	When a Customer Needs These Features
Content Engine 7325A	• Ultra high-end content delivery capabilities for advanced applications such as streaming media, e-learning, and corporate communications
Content Engine 7305A	• High-end content delivery capabilities for advanced applications such as streaming media, e-learning, and corporate communications
Content Engine 566	• Mid-range branch office and datacenter cache ideal for transparent caching, URL filtering, and edge content delivery
Content Engine 511	• Entry-level transparent caching and URL filtering capabilities along with limited content delivery
Content Engine Network Modules	• Router-integrated caching and content delivery network modules for 2600, 3600, 3700 branch access routers

Key Features

- Caching/Web Application Acceleration—Provides accelerated content delivery, improved performance of web-based business applications, WAN bandwidth cost savings, and protection vs. uncontrollable bottlenecks
- Content Filtering—Enables administrators to block, monitor, and report on end users' access to non-business and objectionable content (uses N2H2 Internet Filtering Protocol, Secure Computing SmartFilter, or Websense Enterprise Software)
- Content Delivery—Use in conjunction with Cisco Content Distribution Manager to enable rich media e-learning and corporate communications; deliver new premium hosting services such as on-demand content delivery and streaming media; and, to scale Web sites

Competitive Products

- Blue Coat: Blue Coat Server Accelerator 700 and 7000 Series and Blue Coat Systems Director
- Volera: Excelerator, Media Excelerator, Secure Excelerator
- Network Appliance: NetCache C1200/2100/6100 Series Appliances and Content Director

Specifications

Feature	7325A	7305A	566	511	Network Module	SA-7340
Supported Interfaces	Two 10/100/1000BASE-T X	Two 10/100/1000BASE-T X	Two 10/100/1000BASE-T X	Two 10/100/1000BASE-T X	One internal 10/100-Mbps Ethernet to router backplane; one external 10/100-Mbps Ethernet	
SDRAM	4 GB	2 GB	1 GB	512 MB	Up to 512 MB	
Max Storage	1,440 GB; U320 SCSI	936 GB; U320 SCSI	396 GB; U320 SCSI	160 GB; SATA	80 GB; IDE	1,008 GB; U320 SCSI
Maximum Internal Storage	432 GB; U320 SCSI	432 GB; U320 SCSI	144 GB; U320 SCSI	160 GB; SATA	40 GB or 80 GB; IDE	1, 008 GB; U320 SCSI
Flash Memory	128 MB	128 MB	128 MB	128 MB	16 MB internal; optional Compact Flash Memory	
Storage Array Support	Yes	Yes	Yes[1]	No	No	
Rack Units	2 RU	2 RU	1 RU	1 RU	N/A	3 RU
Dimensions (HxWXD)	3.36 x 17.46 x 27.48 in	3.36 x 17.46 x 27.48 in.	1.72 x 17.3 x 20 in.	1.72 x 17.3 x 20 in.	One slot in 2600/3600/3700 chassis	5.0 x 17.5 x 21.8 in
Max. Weight	62 lb.	62 lb.	28 lb.	28 lb.	1.5 lb.	82 lb.
Power	Hot-swappable redundant AC or DC	Hot-swappable redundant AC or DC	300W AC	300W AC	From 2600/3600/3700 chassis	500W AC

1. 7-Disk Default SA-7340 Configuration only

Selected Part Numbers and Ordering Information[1]

Cisco Content Engine 7300 Series Hardware

CE-7325A-K9	Content Engine 7325A AC Power, ACNS software
CE-7305A-K9	Content Engine 7305A AC Power, ACNS software. Also runs as CDM or CR

Cisco Content Engine 500 Series Hardware

CE-566-144G-K9	Cisco Content Engine 566, AC Power, ACNS software. Also runs as CDM or CR
CE-511-K9	Cisco Content Engine 511 AC Power, ACNS software

Cisco Storage Array 7340

SA-7340	Cisco Storage Array 7340, (7) 72 GB drives, AC power

Cisco Content Engine Network Module Hardware

NM-CE-BP-40G-K9=	Content Engine Network Module, basic performance, 20-GB IDE hard disk
NM-CE-BP-80G-K9=	Content Engine Network Module, basic performance, 40-GB IDE hard disk
NM-CE-BP-SCSI-K9(=	Content Engine Network Module, basic performance, SCSI controller (requires external SCSI disk array)

1. This is only a small subset of all parts available via URL listed under "For More Information."

For More Information

See the Cisco Content Engine Web sites: **http://www.cisco.com/go/ce500** and
http://www.cisco.com/go/ce7300

Cisco CSS 11500 Series Content Services Switches

The Cisco CSS 11500 Series Content Services Switch is suitable for both enterprises and service providers seeking to reduce data center costs, boost e-business application performance, offer enhanced services, ensure online transaction integrity, and provide the best possible online experience for customers, business partners, and internal workers.

The Cisco CSS 11500 is available in three models—the standalone Cisco CSS 11501, the three-slot Cisco CSS 11503 and the six-slot Cisco CSS 11506. Both the CSS 11503 and CSS 11506 systems take advantage of the same high-performance, modular architecture and use the same set of I/O, Secure Sockets Layer (SSL), and session accelerator modules. Also, all three systems operate with the same WebNS software, enabling the Cisco CSS 11501, 11503 and 11506 to offer industry-leading content switching functionality within three compact, hardware platforms.

When to Sell

Sell This Product	When a Customer Needs These Features
CSS 11501	• Standalone, fixed-configuration switching platform with up to 8 Fast Ethernet ports and 1 optional Gigabit Ethernet port • Cost-effective server, cache, and firewall load balancing • Complex Web applications requiring high-level URL and cookie switching
CSS 11503	• Compact, high-performance, modular content switching platform with up to 32 Fast Ethernet ports or up to six Gigabit Ethernet ports • Cost-effective server, cache, and firewall load balancing • Integrated SSL capabilities for secure transactions • Complex Web applications requiring high-level URL and cookie switching
CSS 11506	• Compact, high-performance, modular content switching platform with up to 32 Fast Ethernet ports or up to six Gigabit Ethernet ports • Cost-effective server, cache, and firewall load balancing • Integrated SSL capabilities for secure transactions • Complex Web applications requiring high-level URL and cookie switching

Key Features

- Introduces an intelligent, distributed architecture
- Improves site availability and transaction integrity by introducing Adaptive Session Redundancy (ASR)—a new industry standard in stateful failover
- Delivers customized combinations of ports, performance, and services
- Scales secured transaction performance through support of an integrated, high-capacity Secure Sockets Layer (SSL) module (WebNS 5.20)
- Protects investment by enabling upgrades of performance, ports, and services through modularity

Competitive Products

- Alteon/Nortel: ACEdirector and 700 Series
- F5 Networks: Big/IP and LAN switch Partners
- Foundry Networks: ServerIron
- Radware: Web Server Director (WSD)
- Resonate: Central Dispatch and Global Dispatch

Specifications

Feature	Cisco CSS 11501	Cisco CSS 11503	Cisco CSS 11506
Modular Slots	N/A	3	6
Base Configuration	Switch Control with 8 10/100 Ethernet; 1 GBIC port	Switch Control Module 2 Gigabit Ethernet (GBIC) ports	Switch Control Module 2 Gigabit Ethernet (GBIC) ports
Max GB Ethernet Ports	1	6	12
Max 10/100 Ethernet ports	8	32	80
2-port GB Ethernet I/O Module		Max: 2	Max: 5
16-port GB Ethernet I/O Module		Max: 2	Max: 5
8-port GB Ethernet I/O Module		Max: 2	Max: 5

Feature	Cisco CSS 11501	Cisco CSS 11503	Cisco CSS 11506
SSL Module		Max: 2	Max: 5
Session Accelerator modules		Max: 2	Max: 5
Redundancy features	Active-active Layer 5	Active-active Layer 5	Active-active Layer 5
	Adaptive session redundancy	Adaptive Session Redundancy	Adaptive Session Redundancy
	Virtual IP Address (VIP) redundancy	VIP redundancy	VIP redundancy
			Active-standby SCM
			Redundant switch fabric module
			Redundant power supplies
Height	1/75 in. (1 rack unit)	3.5" (2 rack units)	8.75" (5 rack units)
Bandwidth	Aggregate 6 Gbps	Aggregate 20 Gbps	Aggregate 40 Gbps
Storage	512 MB hard disk or 256 MB Flash disk	512-MB hard disk or 256-MB Flash memory disk	512-MB hard disk or 256-MB Flash memory disk
Power	Integrated AC supply	Integrated AC or DC	Up to 3 AC or 3 DC

Selected Part Numbers and Ordering Information[1]

Cisco CSS 11500 Series Content Services Switches

CSS11506-2AC	Cisco 11506 Content Services Switch including SCM with 2 Gigabit Ethernet ports, hard disk, 2 switch modules, 2 AC power supplies, and a fan (requires SFP GBICs)
CSS11506-2DC	Cisco 11506 Content Services Switch including SCM with 2 Gigabit Ethernet ports, hard disk, 2 switch modules, 2 DC power supplies, and a fan (requires SFP GBICs)
CSS11503-AC	Cisco 11503 Content Services Switch including SCM with 2 Gigabit Ethernet ports, hard disk, and integrated AC power supply, integrated fan, and integrated switch module (requires SFP GBICs)
CSS11503-DC	Cisco 11503 Content Services Switch including SCM with 2 Gigabit Ethernet ports, hard disk, and integrated DC power supply, integrated fan, and integrated switch module (requires SFP GBICs)
CSS5-SCM-2GE	Cisco CSS 11500 System Control Module with 2 Gigabit Ethernet ports and hard disk (requires SFP GBICs)
CSS5-IOM-8FE	Cisco CSS 11500 Fast Ethernet I/O Module: 8-port TX
CSS5-IOM-16FE	Cisco CSS 11500 Fast Ethernet I/O Module: 16-port TX
CSS5-IOM-2GE	Cisco CSS 11500 Gigabit Ethernet I/O Module: 2-port (requires SFP GBICs)
CSS5-SAM	Cisco CSS 11500 Session Accelerator Module
CSS5-SSL	Cisco CSS 11500 SSL Module
CSS11501	Cisco CSS 11501 Content Services Switch-8 Fast Ethernet, hard disk, AC

1. This is only a small subset of all parts available via URL listed under "For More Information". Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the *Distribution Product Reference Guide* at: http://www.cisco.com/dprg (limited country availability).

For More Information

See the CSS 11500 series Web site: **http://www.cisco.com/go/11500**

Cisco Content Distribution Manager

The Cisco Content Distribution Manager (CDM) configures network and device policy settings for edge node Content Engines (CE). Used to accelerate web content and save network bandwidth in a content networking architecture, the CDM can be easily integrated into existing network infrastructures.

Cisco Enterprise Content Delivery Networks (ECDNs) allow service providers and enterprises to distribute rich media content closer to their target customers overcoming issues such as network bandwidth availability, distance or latency obstacles, origin server scalability, and congestion issues during peak usage periods. The ECDN solution enables content delivery services for web hosting, streaming, e-commerce, e-learning, corporate communications, and mission critical e-business applications.

When to Sell

Sell This Product	When a Customer Needs These Features
CE-566-144GB-k9 CDM Personality	• Small to medium and large enterprise networks, supports up to 1000 Cisco Content Engines
CE-7305A-K9 CDM Personality	• Large enterprise and service provider deployment, supports thousands of Cisco Content Engines

Key Features

- Complete CDN solution with Cisco Content Router and Cisco Content Engines
- Central control over delivery of high-bandwidth content, live and video-on-demand over any IP network
- Easy-to-use management capabilities through a Web-based GUI; services include previewing and scheduling replication of media to edge devices, bandwidth and content management
- Automatically generates thumbnail reference images and sample Web pages for integration with corporate extranet, intranet, and Internet sites
- One URL per media file provides seamless integration into any Web site
- Integrates with standards for Web multimedia presentation, including HTML/DHTML, eXtensible Markup Language (XML) and SMIL
- Secure and fault-tolerant file transfer using Secure Socket Layer (SSL) encryption for secure media transfers
- Channel configuration for media distribution to any number of discrete audiences using "distribution lists"
- Host content for a variety of customers within a single CDN
- Ability to create multiple virtual CDNs addressing targeted media distribution
- Content registration in cache logs for billing capabilities
- The CDM is delivered as a "personality" of either the 566 or 7305 Series Content Engine products

Competitive Products

• Cacheflow: Client and Server Accelerators	• Network Appliance: ContentDirector
• Inktomi: Traffic Server	

Specifications

Feature	CE-566 Content Distribution Manager	CE-7305 Content Distribution Manager
Sampling of Rich Media File Formats	MPEG; RealVideo; Windows Media; QuickTime; HTML, GIF, JPEG; Adobe Acrobat; Macromedia Shockwave; CAD/CAM; MRI	Same as CE-566 CDM
Supported Interfaces	Autosensing 10/100/1000BASE-T	Same as CE-566 CDM
Recommended Network Size	Dozens to 100s of CEs	Thousands of CEs
Processor Speed	2.8 GHz Celeron	2.8 GHz P4
RAM	1GB	2 GB
Internal Storage	144 GB, 10K RPM, U320 SCSI	144 - 432 GB, 10K RPM, U320 SCSI
Rack Units	1	2
Dimensions (HxWXD)	1.72 x 17.3 x 20 in.	3.36 x 17.46 x 27.48 in.

Selected Part Number and Ordering Information[1]

Cisco Content Distribution Manager

CE-566-144GB-K9	Cisco 566 Content Engine, supports Content Distribution Manager configuration
CE-7305A-K9	Cisco CE-7305A Content Distribution Manager

1. This is only a small subset of all parts available via URL listed under "For More Information". Some parts have restricted access or are not available through distribution channels.

For More Information

See the Content Distribution and Management Web site: **http://www.cisco.com/go/cdm**

Cisco Content Router

The Cisco Content Router is a compact, high-performance solution for enabling premium Web services over public or private networks. Featuring either Cisco Enterprise Content-Delivery Network (ECDN) or Content Router 1.1 Software, customers can transparently route user Web browsers to the optimal content engine for file delivery.

With its patented routing technology, the Cisco CR provides redundancy, scalability, and performance enhancements for network Web sites in either an enterprise or public service provider network. Using Hypertext Transfer Protocol (HTTP)-based re-direction, the Cisco CR 4430 can redirect users over the public network or behind the security of a corporate firewall, making it a vital component of the Cisco end-to-end Content Networking Solution.

Like the CDM, the CR is delivered as a "personality" of either the 566 or 7305 Series Content Engine products.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco 566 or 7305 Content Router	• When a customer needs to support a Cisco Enterprise Content Delivery Network with HTTP redirection • Supports resiliency for ECDNs when used with a Cisco CSS 11500 content services switch • Up to five Cisco CRs can be deployed in an ECDN network to provide greater network availability and performance

Key Features

- Uses HTTP to redirect a client to the best site on the Internet based on network delay
- Transparent redirection to the end user and works with any IP application
- Easy configuration through a Cisco IOS-style command-line interface
- Redundant configurations, multiple CRs can be deployed at the origin site to provide fail-over and load scaling

Specifications

Feature	Cisco Content Router
Network Interface Card	10/100/1000BASE-TX
Processor	2.8 GHz Celeron(CE-566) / 2.8 GHz P4 (7305A)
RAM	1 or 2GB
Internal Storage	144 - 432 GB
Rack Units	1 or 2
Dimensions (HxWXD)	See CE-566 and CE-7305A specifications
Weight	See CE-566 and CE-7305A specifications

Selected Part Number and Ordering Information

Cisco Content Routers

CE-566-144GB-K9	Content router that utilizes HTTP redirection for use with the ECDN solution
CE-7305A-K9	

For More Information

See the Cisco Content Router Web site: **http://www.cisco.com/go/cr**

Cisco Content Switching Module

The Cisco Content Switching Module (CSM) is a Catalyst 6500 line card that balances client traffic to farms of servers, firewalls, SSL devices, or VPN termination devices. The CSM provides a high-performance, cost-effective load balancing solution for enterprise and Internet Service Provider (ISP) networks. The CSM meets the demands of high-speed Content Delivery Networks, tracking network sessions and server load conditions in real time and directing each session to the most appropriate server. Fault tolerant CSM configurations maintain full state information and provide true hitless failover required for mission-critical functions.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco Content Switching Module	• A high performance, L4 to L7 load balancing solution integrated with Cisco's Catalyst 6500 • Load balancing for the highest traffic sights • Support for up to 1,000,000 concurrent TCP connections

Key Features

- Market-leading performance—Establishes up to 150,000 Layer 4 connections per second and provides high-speed content switching, while maintaining 1 million concurrent connections
- Outstanding price/performance value for large data centers and ISPs—Features a low connection cost and occupies a small footprint. The CSM slides into a slot in a new or existing Catalyst 6500 and enables all ports in the Catalyst 6500 for layer 4 through layer 7 content switching. Multiple CSMs can be installed in the same Catalyst 6500 for redundancy and scalable performance
- Uses the same Cisco IOS Command Line Interface (CLI) that is used to configure the Catalyst 6500 Switch

Competitive Products

- Alteon/Nortel: Web Switching Module, Application Switch, and Web Switches
- Radware: Web Server Director (WSD)
- F5 Networks: Big/IP
- Foundry Networks: ServerIron
- Resonate: Central Dispatch and Global Dispatch

Specifications

Feature	Cisco Content Switching Module (CSM)
Configuration Limits	512 total VLANs (client and server); 4000 virtual servers; 4000 server farms; 16,000 real servers; 4000 probes; 16,000 access control list (ACL0 items
Connections	1,000,000 concurrent TCP connections
	150,000 connection setups per second-Layer 4 75,000 connection setups per second-Layer 7
Throughput	4 Gigabits-per-second total combined (client-to-server and server-to-client) throughput 1.25 million packets per second
Catalyst Switch Platform Requirements	Native support (switch running Cisco IOS Software only
	Hybrid Support (switch running IOS/CatOS)
	Functions as a bus enabled line card-not fabric enabled
	Multilayer switch feature card-MSFC or MSFC2

Selected Part Numbers and Ordering Information[1]

Cisco Content Switching Module

WS-X6066-SLB-APC	Catalyst 6500 Content Switching Module

For More Information

See the Cisco Content Switching Module Series Web site at: **http://www.cisco.com/go/csm**

Cisco SSL Module for Catalyst 6500

The SSL Services Module is an integrated service module for the Cisco Catalyst® 6500 Series that offloads the processor-intensive tasks related to securing traffic with Secure Sockets Layer (SSL) and increases the number of secure connections supported by a Web site.

When to Sell

Sell This Product	When a Customer Needs These Features
SSL Module for Catalyst 6500	• An integrated SSL encryption/decryption solution featuring Cisco's Catalyst 6500
	• Scalable SSL processing: 2,500 connection setups/second per module-10,000 per Chassis fully-populated with SSL modules

Key Features

- Server SSL offload—performs all SSL-related tasks, allowing servers to handle high-speed clear text traffic
- Scalable performance—provides a simple means of addressing increased performance requirements by installing additional SSL modules in a Catalyst 6500 switch
- Stickyness—maintains persistence even when clients request new session IDs, in Integrated Mode with Content Switching Module (CSM)
- Certificate optimization—provides cost savings by requiring only a single certificate copy vs. a copy for each server subject to customer and certificate authority agreement

Competitive Products

• F5 Networks eCommerce 540	• Nortel/Alteon iSD 410 SSL Accelerator

Specifications

Feature	Cisco SSL Module for Catalyst 6500
System Capacity and Performance	2500 connection setups/sec per module-10K per chassis; 60K concurrent client connections-240K per chassis; 300 Mbps bulk rate encryption-1.2 Gbps per chassis; 256 key pairs; 256 key certificates; Up to 2K key sizes-256 proxy servers
Scalability	Up to four SSL modules in the same Catalyst 6500
Integration with Server Load Balancing	Tightly integrated in the Cisco Catalyst 6500 Switch with the CSM

Selected Part Numbers and Ordering Information[1]

Cisco SSL Module for Catalyst 6500

WS-SVC-SSL-1-K9=	Cisco SSL Module for Catalyst 6500

For More Information

See the Catalyst 6500 Series Web site at: **http://www.cisco.com/go/cat6500**

Cisco 11000 Series Secure Content Accelerator (SCA 11000)

The Cisco 11000 Series Secure Content Accelerator (SCA 11000) is an appliance-based solution that increases the number of secure connections supported by a Web site by offloading the processor-intensive tasks related to securing traffic with SSL. Available in two versions, the SCA 11000 simplifies security management and allows Web servers to process more requests for content and handle more e-transactions.

Key Features

- Offloads all encryption, decryption, and secure process for a Web site, freeing Web servers to perform essential Web tasks and eliminating the need for SSL server software
- Boosts e-commerce site performance up to 50 times through dedicated SSL processing hardware—supports 200 or 800 new SSL connections per second
- Centralizes and manages the widest range of digital certificates to ensure complete independence from the Web server
- Provides linear scalability and fault tolerance—interoperates with the Cisco 11500 series Content Services Switches (CSS 11500) for intelligent load balancing of SSL traffic
- Works with any Web server platform to provide SSL support for any Web site
- Installs quickly and easily with very low maintenance—no special software required on Web servers or Cisco 11500 series switches

Specifications

Cisco SCA 11000	SCA2	SCA
Number of Ports	Two 10/100BaseTX Ports	Two 10/100Base TX Ports
Port Description	Network Ports: Two 10/100Base TX; Console Port: DB9 Serial Port; Failover Port: DB9 Serial Port	Network Ports: Two 10/100Base TX; Console Port: DB9 Serial Port; Failover Port: DB9 Serial Port
Data Transfer Rates	Ethernet: 10 Mbps (half duplex), 20 Mbps (full duplex) Fast Ethernet: 100 Mbps (half duplex), 200 Mbps (full duplex)	Ethernet: 10 Mbps (half duplex), 20 Mbps (full duplex) Fast Ethernet: 100 Mbps (half duplex), 200 Mbps (full duplex)
Configuration Software OS Support	Windows NT 4.0; Red Hat Linux 5.0, 6.0, 6.1, 6.2	Windows NT 4.0; Red Hat Linux 5.0, 6.0, 6.1, 6.2
Memory	64 MB RAM; 16 MB Flash ROM	64 MB RAM; 16 MB Flash ROM
Dimensions	8.875 x 1.75 x 19 in.	8.875 x 1.75 x 19 in.
Connection Rates	800	200
Concurrent Sessions	5,000	30,000

Selected Part Numbers and Ordering Information

Cisco SCA 11000
CSS-SCA-2FE-K9	CSS Secure Content Accelerator
CSS-SCA2-2FE-K9	CSS Secure Content Accelerator version 2

For More Information

See the Cisco SCA 11000 Web site: **http://www.cisco.com/go/sca11000**

Cisco DistributedDirector[1]

DistributedDirector provides dynamic, transparent, and scalable Internet traffic load distribution between multiple geographically-dispersed servers. DistributedDirector is a global Internet service-scaling solution that utilizes Cisco IOS software and leverages routing table information, delay characteristics, and other information to make "network intelligent" load distribution and site selection decisions.

DistributedDirector transparently redirects end-user service requests to the closest responsive server, which increases access performance and reduces transmission costs. Users need only a single subdomain name or URL-embedded hostname for accessing a distributed set of servers, thus providing the appearance of a single virtual server.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco Distributed Director	• Load distribution across geographically/topologically dispersed TCP/IP servers • High availability for dispersed mission-critical applications • Data center redundancy and failover

Key Features

- Transparent distribution of all IP Services (TCP and UDP), including HTTP, FTP, Telnet, and Gopher; provides global scalability for all IP-based network services
- Improves access performance by redirecting to the topologically closest server
- Calculates client-to-server round-trip times in real time; redirects clients to server with lowest client-to-server link latency, maximizing end-to-end performance
- Redirects clients only to responsive servers, resulting in maximized availability
- Cisco IOS Software & standard command line interface for device configuration
- Transparently add and remove distributed servers, simplifying maintenance
- Supports multiple domains; cost-effective IP service scalability solution

Competitive Products

• Alteon Networks: ACEdirector and Web Switches with WebOS GLSB	• Resonate, Inc.: Global Dispatch
• F5 Labs: 3DNS	• RND Networks, Inc.: Web Server Director - Network Proximity (WSD-NP)
• Foundry Networks: ServerIron Switch with Internet IronWare	

For More Information

See the DistributedDirector Web site at **http://www.cisco.com/go/dd**

1. DistributedDirector is available in Cisco IOS software for 2600/2600XM, 3600, and 7200 series routers, starting on release 12.2(4)T Enterprise Plus feature sets; Dedicated routers may be recommended for DistributedDirector to meet performance targets of both routing and load balancing; If no dedicated hardware platform is available for running DistributedDirector, it is recommended customers use the Configurable DD Cache feature (available in 12.2(8)T) to limit the memory DistributedDirector may consume for DNS caching; To take advantage of enhanced caching capabilities, routers should be configured with additional DRAM (128MB or more)

Cisco GSS 4480 Global Site Selector

The Cisco GSS 4480 is a networking product that globally load balances distributed data centers. The Cisco GSS 4480 acts as the cornerstone of multisite disaster recovery plans in deployments of Cisco's market-leading content switches. Customers deploying new Cisco content switches such as the Cisco CSS 11500 Content Services Switch and the Content Switching Module (CSM) for the Cisco Catalyst ® 6500 Series switches or have already deployed legacy switches such as the Cisco CSS 11000 and Cisco Local Directors can benefit from the new levels of traffic management and centralized command and control provided by the Cisco GSS 4480.

Key Features

- Provides resilient architecture critical for disaster recovery and multisite Web applications deployments
- Offers flexible heterogeneous support for all Cisco SLBs and DNS-capable networking products
- Provides centralized command and control of DNS resolution process for direct and precise control of global load-balancing process
- Offers site persistence for e-commerce applications
- Offers a unique DNS race feature-The Cisco GSS 4480 can in real time direct content consumers to the closest data center
- Supports a Web-based graphical user interface (GUI) and DNS wizard to simplify the DNS command and control

Competitive Products

• F5 Networks eCommerce 540	• Nortel/Alteon iSD 410 SSL Accelerator

Specifications

Feature	Cisco GSS 4480
Number of Ports	Two 10/100Base TX Ports
Port Description	Network Ports: Two 10/100Base TX; Console Port
DNS requests per second	4000, depending on configuration (~ 345 million DNS requests per day per Cisco GSS 4480; an entire system is capable of 2.7 billion DNS requests per day)
Configuration Software OS Support	Windows NT 4.0; Red Hat Linux 5.0, 6.0, 6.1, 6.2
Network management	Console port-CLI Access to system via Telnet; Secure copy (SCP) or FTP; GUI-Secure HTTP (HTTPS) for Internet Explorer and Netscape Navigator
Storage	One 36-GB hard drive
Physical	One-rack unit size chassis; Network management serial port1 GB of RAM600-MHz PIII CPU
Dimensions	1.72 x 17.5 x 14.13 in. (43.7 x 444.5 x 358.9 cm)

Selected Part Numbers and Ordering Information[1]

Cisco GSS 4480

Cisco GSS 4480-K9	Global site selector
SF-GSS-V1.0-K9	SF-GSS-V1.0-K9Global site selector software

For More Information

See the Cisco GSS 4480 Web site: **http://www.cisco.com/go/gss**

CHAPTER 7

Broadband and Dial Access

Broadband and Dial Access Products at a Glance

Remote Dial Access—Data and Voice (VoIP)

Product[1]	Features	Page
Cisco AS5350 Series Universal Gateways	• High performance, 1RU, universal gateway • Universal Port technology for multiple data, voice, and fax services on any port at any time • 2,4, & 8 CT1/7 CE1/PRI configurations for 48 to 240 channels • Supports broad range of async/ISDN/VoIP/wireless protocols • Two 10/100 Ethernet ports, two 8 Mbps serial backhaul ports • Two 8 Mbps serial backhaul ports • Cisco SS7 signaling gateway interoperability • Flexible, redundant backhaul methods	7-4
Cisco AS5400 Series Universal Gateways	• High performance, 2RU, universal gateway • Universal Port technology for multiple data, voice, and fax services on any port at any time • Two models: Cisco AS5400HPX and Cisco AS5400 • 8 to 16 CT1/CE1/PRI or 1 T3 configuration for 192 to 648 channels • Low power and high availability design • Supports a broad range of async/ISDN/VoIP/fax/wireless protocols • Cisco SS7 signaling gateway interoperability • Flexible, redundant backhaul methods	7-7
Cisco AS5850 Universal Gateway	The highest density universal gateway in the marketplace • Supporting at least 2,688 sessions data, voice, and fax services on any port at any time using T1, E1, DS3 or STM-1 trunk interface • Constant density regardless of codec type, ECAN or VAD settings • Extensive high availability features • TDM grooming capability	7-9
SS7 Signaling & Softswitch Products	• Cisco PGW 2200 Softswitch—Call Agent providing signaling and call control functionality for PSTN Gateway and transit applications in international markets • Cisco BTS 10200 Softswitch—Class 4/5 softswitch for Voice over IP applications	7-11

1. For Cisco 2509 and 2511 Access Servers, see page 1-24.

Broadband Cable

Product	Features	Page
Headend and Distribution Hub Equipment		
Cisco uBR7100 Series Universal Broadband Router	Entry-level, standards-based fixed-configuration CMTS and integrated router for lower-density residential and MxU customers serviced by cable operators or ISPs. • Compact form factor (2RU) • Supports up to 2,000[1] broadband subscribers • Layer 2 bridging and full Layer 3 routing • DOCSIS 1.0, 1.1 and Euro--DOCSIS 1.0 qualified; supports DOCSIS Set-top Gateway (DSG) • Fixed-configuration models including: Cisco uBR7111, Cisco uBR7111E, Cisco uBR7114, and Cisco uBR7114E • Integrated upconverter/modulator • Embedded dual 10/100 BaseT Ethernet network interface • Selection of LAN and WAN interfaces	7-12

Product	Features	Page
Cisco uBR7246VXR Universal Broadband Router	Modular, standards-based communications-grade CMTS and integrated router for high-growth broadband cable deployments	7-13
	• Supports up to 10,000[1] broadband subscribers	
	• Offers large variety of LAN and WAN interface options and processors	
	• Full Layer 3 implementation	
	• DOCSIS, 1.0, 1.1, Euro-DOCSIS 1.0, 1.1, 2.0 (ATDMA-only) and PacketCable 1.0 qualified; Supports DSG	
	• Selection of cable line cards that includes Cisco uBR7200 Series MC28U, MC28X, MC16U, and MC16X Broadband Processing Engines (BPEs)	
	• Selection of nine cable line cards that include Cisco MC28C, MC16S, MC16E, MC16C, and MC14C Universal Broadband Router (uBR) cards and Cisco uBR7200 Series MC28U, MC28X, MC16U, and MC16X Broadband Processing Engines (BPEs)	
Cisco uBR10012 Universal Broadband Router	Highest-capacity communications-grade CMTS on the market today. Delivers the services, performance, scale, and carrier-class reliability large cable operators and ISPs demand	7-14
	• Supports up to 64,000[1] broadband subscribers	
	• A-TDMA and advanced spectrum management	
	• Full Layer 3 implementation	
	• DOCSIS, 1.0, 1.1, Euro-DOCSIS 1.0, 1.1 and PacketCable 1.0 qualified; Supports DSG	
	• High-performance aggregation platform with Parallel Express Forwarding patented by Cisco	
	• Selection of line cards that includes Cisco 5x20U Broadband Processing Engine (BPE)	
	• Network interfaces that includes 1 Gbps over Gigabit Ethernet and OC-48-Dynamic Packet Transport (DPT) Interface Module Set	
Cisco uBR3x10 RF Switch	• Exceeds packet cable availability requirements	7-15
	• Enables a fully redundant CMTS with no single point of failure; works with the Cisco uBR7246VXR and uBR10012	
	• Maximizes density with more than 250 MCX-type connector	
Customer Premise Equipment (CPE)		
Cisco uBR905 Cable Access Router	Integrated DOCSIS-based cable modem and router with hardware accelerated IPSec VPN tunneling support that includes:	7-16
	• 4 Ethernet and 1 CATV port	
	• Supports DOCSIS-based data and VPN services	
Video Edge QAM Equipment		
Cisco uMG9820 QAM Gateway	• Offers the highest-density Gigabit Ethernet QAM product available today on the market for digital video networks	7-17
	• Modular, single-rack-unit chassis design enhances scalability by making it easy to add QAM channels as VoD service grows	
	• Optimized for Gigabit Ethernet networking accepting full line-rate Gigabit Ethernet video transport feeds	
Network Management		
Cisco Broadband Configurator	• Provides a user interface to collect information needed to generate DOCSIS or PacketCable configuration files	7-18
Cisco Broadband Troubleshooter	Provides a diagnostic tool for RF technicians to quickly and easily isolate problems in the cable plant	7-18
	• Analyzes and sorts RF conditions into specific categories such as attenuation, provisioning, noise or packet corruption (CRC) errors	
	• Provides dashboard views of network health, CMTS and CM statistics, and CM snapshots	
	• Correlates CM to subscriber information	
	• Works with an optional tool to map CMs and status to subscriber street-level views	
Cisco Cable Diagnostic Manager	Provides fault, configuration, and performance management for Cisco CMTS products and DOCSIS and EuroDOCSIS CMs via proactive network surveillance	7-18
	• Supports CM software image downloads	
	• Offers topology tree map of CMTS and CMs	
	• Provides tabular and graphical historical utilization and performance reports	
	• Offers color-coded chassis views to provide at-a-glance status	

1. Numbers are for reference only. Actual numbers for specific systems will vary depending on network/service loading, traffic, and other parameters.

DSL (Digital Subscriber Line) Access

Product	Features	Page
DSL Access CPE[1]	Wide variety of Cisco router-based DSL CPE solutions for business-class to small office applications	7-19
Broadband Services Aggregation	• Cisco 7200 Series Router—Up to 16000 broadband sessions on a 3 RU platform, including aggregation of PPP, PPPoE, and PPPoA	7-20
	• Cisco 7301 Series Router—1 RU Broadband Aggregation Router that is capable of delivering up to 16000 sessions per chassis	
	• Cisco 10000 Series Router—A carrier-class router that supports up to 61,500 broadband sessions with 99.999 percent system uptime	

1. For ADSL, ISDN, and IDSL small office/home office (SOHO) customer premise equipment (CPE), see Chapter 1: Routing

ATM Multiservice WAN Switching

Product	Features	Page
Cisco BPX 8600 Series Switches	• Large-scale Advanced ATM switch for service provider and large enterprise applications • Narrowband and broadband services in a single, highly reliable platform using a multishelf architecture with intelligent call processing for Frame Relay and ATM switched virtual circuits (SVCs) • 20 Gbps of high-throughput switching for multiple traffic types data, voice, and video	7-21
Cisco MGX 8850 Series Advanced ATM Multiservice Switches	• Multiservice switch, scales from DS0 to OC-48c/STM-16 speeds • Serves as a stand-alone device for narrowband services, an integrated edge concentrator or a broadband edge switch when equipped with 45 Gbps switch card and broadband ATM modules • Supports PNNI routing	7-21
Cisco MGX 8830 Series Multiservice Switches	• Multiservice switch scales from DS0 to OC-3c/STM-1 speeds • A standalone switch with narrowband interfaces and broadband trunking to remote sites with low density and high service mix requirements with 1.2 Gbps switch fabric • Supports PNNI routing	7-22

Long Reach Ethernet

Product	Features	Page
Cisco Catalyst 2950 LRE Switches	Fixed configuration Ethernet switches for delivering converged voice, video, and data services over existing category 1/2/3 wiring for the in-building MxU, Hospitality, and Enterprise markets • 8 or 24 LRE ports + 2 10/100/1000BASE-T ports + 2 Small Form-Factor Pluggable (SFP) ports (two of the four uplinks active at one time), deliver Ethernet traffic (up to 15 Mbps) over standard copper cabling (up to 5000 feet); ideal for in-building applications • Co-exists with POTS and ISDN traffic on the same line and compatible with ADSL • Advanced quality of service, security, and multicast features to support converged voice, video (broadcast and VoD), and high speed data services	7-22
Cisco LRE CPE Devices	• Cisco 575 LRE CPE—Compact, includes one RJ-45 Ethernet connection and two RJ-11 connectors (for telephone) • Cisco 585 LRE CPE—Compact, includes four RJ-45 switched Ethernet connections and two RJ-11 connectors (for telephone). Supports 802.1p QoS	7-23
Cisco LRE POTS Splitter	• Cisco LRE 48 POTS Splitter—48 ports in 1RU. Ensures that POTS service is separate, and never compromised by LRE switch reconfiguration or downtime	7-23
Cisco Broadband Building Service Manager	• Server system enables automated online activation, integrated billing, tiered service levels • Ideal for any form of broadband access technology, including Ethernet, LRE, Cable access, DSL, Wireless, or Fiber	7-24

Memory Information for Access Routers

Router	Memory Type	Slots	Default Memory	Max Memory	Default Config. (Notes)
Cisco AS5350 Universal Gateway	Main SDRAM Shared Boot Flash System Flash	N/A	256 MB 128 MB 16 MB 64 MB	512 MB 128 MB 16 MB 64 MB	
Cisco AS5400HPX Universal Gateway	Main SDRAM Shared Boot Flash (3V) System Flash (3V)	2 1 1 2	512 MB 128 MB 16 MB 64 MB	512 MB 128 MB 16 MB 64 MB	Cisco AS5400HPX and Cisco AS5400 use different Boot and System Flash — NOT interchangeable
Cisco AS5400 Universal Gateway	Main SDRAM Shared Boot Flash (5V) System Flash (5V)	2 1 1 2	256 MB 128 MB 16 MB 64 MB	512 MB 128 MB 16 MB 64 MB	Cisco AS5400HPX and Cisco AS5400 use different Boot and System Flash — NOT interchangeable
Cisco AS5850 Universal Gateway	RSC SDRAM Feature Cards SDRAMS		1 GB 128 MB	1 GB 128 MB	Ships with all required memory

Cisco AS5350 Universal Gateway

The Cisco AS5350 Universal Gateway is the only one-rack-unit gateway supporting two-, four-, or eight-port T1/seven-port E1 configurations that provides universal port data, voice, and fax services on any port at any time. The Cisco AS5350 Universal Gateway offers high performance and high reliability in a compact, modular design. This cost-effective platform is ideally suited for Internet service providers (ISPs) and enterprise companies that require innovative universal services.

The Cisco AS5350 Universal Gateway eliminates the need for switches and routers to create a point-of-presence (POP) or "POP-in-a-box" solution. The Cisco AS5350 Universal Gateway has three primary universal gateway configurations: two Channelized T1(CT1)/Channelized E1(CE1)s, four CT1/CE1s, and eight CT1/seven CE1s. It also includes integrated signaling link termination (SLT) functionality for direct connection to a SS7/C7 signaling gateway.

The Cisco AS5350 Universal Gateway comes two high-speed serial ports are provided to support Frame Relay, Point-to-Point Protocol (PPP), and High-Level Data Link Control (HDLC) backhaul. All backhaul interfaces support Hot Standby Router Protocol (HSRP), and all cards and the fan tray are hot-swappable for carrier-class resiliency. The Cisco AS5350 Universal Gateway is the only access server in this form factor that offers universal port capability with these high-availability features.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco AS5350	• 2 to 8 channelized CT1/7 CE1/PRI compact and modular universal
	• High-performance modem, ISDN, and voice call termination
	• Universal port services (data, voice, fax)

Key Features

- 1 RU modular high-performance 2 to 8 channelized CT1/7 CE1/PRI system
- Universal Gateway—which supports multiple data, voice, and fax services on any port at any time
- Ideal for Tier 2/3 ISPs and enterprises requiring innovative universal services
- Feature cards: 2, 4, or 8 CT1/7 E1/PRI feature cards (ISDN calls terminated on the card); 60 or 108 channel Universal Port feature card
- Two 10/100BaseT autosensing Ethernet LAN ports
- Two 8 MB serial WAN ports for Frame Relay, HDLC, or PPP WAN backhaul
- Carrier Class Resiliency: All feature cards and fan tray are hot swappable, modem and voice DSP are pooled and can be configured as spares, AC internal power supply with dual fans, Redundant LAN/WAN backhaul ports, Thermal management and environmental monitoring, ETSI/NEBS Level 3 compliant
- Single or Redundant AC or DC power supply with dual fans
- Cisco SS7 signaling gateway interoperability

Competitive Products

• Lucent/Ascend: Max TNT	• Nuera: BTX Series
• 3Com/CommWorks: Total Control 1000	• Siemans: HiPath Series
• Alcatel: 7505 Series	

Specifications

Feature	Cisco AS5350
Processor	250 MHz RISC processor
Memory	SDRAM: 256 MB (default), 512 MB (maximum) Shared Input/output (I/O): 128 MB (default), 128 MB (maximum) Boot Flash: 16 MB (default), 16 MB (maximum) System Flash: 64 MB (default), 64 MB (maximum) Layer 3 Cache: 2 MB
Feature Card Slots	Three slots
Egress Ports	Two 10/100-MB Ethernet ports Two 8-Mbps serial ports T1/E1 DS1 trunk feature cards
LAN Protocols	IP, IPX, AppleTalk, DECNet, ARA, NetBEUI, bridging, HSRP, 802.1Q
WAN Protocols	Frame Relay, PPP, HDLC (leased line)
Routing Protocols	RIP, RIPv2, OSPF, IGRP, EIGRP, BGPv4, IS-IS, AT-EIGRP, IPX-EIGRP, Next Hop Resolution Protocol (NHRP), AppleTalk Update-Based Routing Protocol (AURP)
QoS Protocols	IP Precedence, Resource Reservation Protocol (RSVP), Weighted Fair Queuing (WFQ), Weighted Random Early Detection (WRED), Multichassis Multilink PPP (MMP) fragmentation and interleaving, 802.1P
Access Protocols	PPP, Serial Line Internet Protocol (SLIP), TCP Clear, IPXCP, ATCP, ARA, NBFCP, NetBIOS over TCP/IP, NetBEUI over PPP, protocol translation (PPP, SLIP, ARA, X.25, TCP, local-area transport [LAT], Telnet), and Xremote
Bandwidth Optimization	Multilink PPP (MP), MLP, TCP/IP header compression, Bandwidth Allocation Control Protocol (BACP), bandwidth on demand, nonfacility-associated signaling (NFAS), traffic shaping
Voice Compression	G.711, G.723.1, (5.3K and 6.3K), G.726, G.729ab, G.Clear, GSM-FR
DSP Voice Features	Echo cancellation, programmable up to 128 ms Transparent transcoding between A-law and mu-law encoding Voice activity detection, silence suppression, comfort noise generation Fixed and adaptive jitter buffering Call progress tone detection and generation - Dial tone, busy, ring-back, congestion, and re-order tones with local country variants DTMF, Multifrequency (MF) Continuity Testing (COT)
Voice and Fax Signaling Protocols	H.323v2, H.323/v3, H.323v4, SIP, MGCP 1.0, TGCP 1.0, Voice Extensible Markup Language (VoiceXML), Real-Time Streaming Protocol (RTSP), Extended Simple Mail Transfer Protocol (ESMTP) T.38 real-time fax relay T.37 fax store and forward Fax detection Fax and modem passthrough Open Settlements Protocol (OSP) Media Recording Control Protocol (MRCP) Text to Speech (TTS) Servers Automatic Speech Recognition (ASR) Servers
SS7	Integrated SLT functionality
Network Security	RADIUS or TACACS+ PAP or CHAP authentication Local user/password database DNIS, CLID, call-type preauthentication Inbound/outbound traffic filtering (including IP, IPX, AppleTalk, bridged traffic) Network Address Translation (NAT) Dynamic access lists SNMPv2, SNMPv3
Virtual Private Networking	IP Security (IPSec) Policy enforcement (RADIUS or TACACS+) L2TP, Layer 2 Forwarding (L2F), and generic routing encapsulation (GRE) tunnels Firewall security and intrusion detection QoS features (committed access rate [CAR], Random Early Detection [RED], IP Precedence, policy-based routing)
Channelized T1	Robbed-bit signaling; Loop Start, Immediate Start, and Wink Start Protocols
Channelized EI	CAS, PRI, E1 R1, E1 R2, leased line, Frame Relay, G.703, G.704
ISDN Protocols Supported	Sync mode PPP, V.120, V.110 at rates up to 38400 bps Network- and User-side ISDN NFAS with backup D-channel QSIG, Feature Group B, Feature Group D DoVBS
Modem Protocols Supported	V.90 or V.92 standard supporting rates of 56000 to 28000 in 1333 bps increments V.92 Modem on Hold V.44 Compression Fax out (transmission) Group 3, standards EIA 2388 Class 2 and EIA 592 Class 2.0, at modulations V.33, V.17, V.29, V.27ter, and V.21 K56Flex at 56000 to 32000 in 2000 -bps increments ITU-T V.34 Annex 12 at 33600 and 31200 bps and many others
Wireless Protocols Supported	V.110, V.120
Full Cisco IOS Support	IP Plus and Enterprise Plus feature sets
Console and Auxiliary Ports	Asynchronous serial (RJ-45)
Chassis	Dimensions (H x W x D): 1.75 x 17.5 x 20.5 in. Weight (fully loaded): 22 lbs. (10 kg)

Selected Part Numbers and Ordering Information[1]

Cisco AS5350 Universal (Data) System Bundles

AS535-2T1-48-AC	AC AS5350; 2T1, 60 ports, IP+ IOS, 48 Data Lic
AS535-4T1-96-AC	AC AS5350; 4T1, 108 ports, IP+ IOS, 96 Data Lic
AS535-8T1-192-AC	AC AS5350; 8T1, 216 ports, IP+ IOS, 192 Data Lic
AS535-2E1-60-AC	AC AS5350; 2E1, 60 ports, IP+ IOS, 60 Data Lic
AS535-4E1-120-AC	AC AS5350; 4E1, 120 ports, IP+ IOS, 120 Data Lic
AS535-8E1-210-AC	AC AS5350; 8E1,216 ports,240 ISDN ports, IP+ IOS,210 Data Lic

Cisco AS5350 Universal (Voice) System Bundles

AS535-2T1-48-AC-V	AC AS5350 Voice; 2T1, 60 ports, IP+ IOS, 48 Voice Lic
AS535-4T1-96-AC-V	AC AS5350 Voice; 4T1, 108 ports, IP+ IOS, 96 Voice Lic
AS535-8T1-192-AC-V	AC AS5350 Voice; 8T1, 216 ports, IP+ IOS, 192 Voice Lic
AS535-2E1-60-AC-V	AC AS5350 Voice; 2E1, 60 ports, IP+ IOS, 60 Voice Lic
AS535-4E1-120-AC-V	AC AS5350 Voice; 4E1, 120 ports, IP+ IOS, 120 Voice Lic
AS535-8E1-210-AC-V	AC AS5350 Voice; 8E1, 216 ports, IP+ IOS, 210 Voice Lic

Cisco AS5350 Spare Chassis

AS5350-AC=	AC 5350 Chassis with Motherboard, IP Plus IOS, default memory
AS5350-DC=	DC 5350 Chassis with Motherboard, IP Plus IOS, default memory

Cisco AS5350 Software

S535AK9-12310	Cisco AS5350 Series IOS ENTERPRISE PLUS IPSEC 3DES
S535AP-12310	Cisco AS5350 Series IOS ENTERPRISE PLUS
S535CK9-12310	Cisco AS5350 Series IOS IP PLUS IPSEC 3DES
S535CP-12310	Cisco AS5350 Series IOS IP PLUS

Cisco AS5350 Memory Options & Spares

MEM-512M-AS535	AS5350 512MB Main SDRAM upgrade

Cisco AS5350 Spare DFC Boards

AS535-DFC-2CT1=	AS5350 Dual T1/PRI DFC card
AS535-DFC-2CE1=	AS5350 Dual CE1/PRI DFC card
AS535-DFC-4CT1=	AS5350 Quad T1/PRI DFC card
AS535-DFC-4CE1=	AS5350 Quad E1/PRI DFC card
AS535-DFC-8CT1=	AS5350 Octal T1/PRI DFC card
AS535-DFC-8CE1=	AS5350 Octal E1/PRI DFC card
AS535-DFC-60NP=	AS5350 60 Nextport DFC card
AS535-DFC-108NP=	AS5350 108 Universal Port Card

Cisco AS5350 Spare Accessories

AS5350RM-19/24=	AS5350 19/24 Rack Mount Kit, Spare
AS535-FTA=	AS5350 Fan Tray Assembly, Spare
AS535-AC-PWR=	AS5350 AC Power Supply, Spare
AS535-AC-RPS=	AS5350 AC Redundant Power Supply, Spare
AS535-DC-PWR=	AS5350 DC Power Supply, Spare
AS535-DC-RPS=	AS5350 DC Redundant Power Supply, Spare

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco AS5350 Universal Gateway Web site: **http://www.cisco.com/go/as5350**

Cisco AS5400 Series Universal Gateways

Cisco AS5400 Series Universal Gateways offer unparalleled capacity in only two rack units (2RUs) and provides universal port data, voice and fax services on any port at any time. High-density (up to 1 CT3), low power consumption (7.2A at 48 VDC per CT3), and universal port digital signal processors (DSPs) make Cisco AS5400 Series Universal Gateways ideal for many network deployment architectures, especially colocation environments and mega points of presence (POPs).

The Cisco AS5400 Series consists of two models, the Cisco AS5400 and the Cisco AS5400HPX. The gateways share the same architecture; the primary difference is the processing capability of the two platforms. The Cisco AS5400 offers unparalleled dial capacity and scalability for MLPPP, L2TP, and V.120 sessions, whereas the Cisco AS5400HPX provides enhanced performance for processor intensive voice and fax applications.

Cisco AS5400 Series support a wide range of IP-based value-added services such as high-volume Internet access, regional/branch-office connectivity, corporate virtual private networks (VPNs), mobile wireless solutions, long distance for Internet service providers (ISPs), international wholesale long distance, distributed prepaid calling, Signaling System 7 (SS7) interconnect, and enhanced voice services.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco AS5400HPX	• High density in a small footprint (16 CT1/CE1 or 1 CT3)
	• Universal port services (data, voice, fax)
	• Enhanced performance for processor intensive voice and fax applications
	• Compact form factor—easy to add capacity as the network grows
	• Low power per port
	• High performance async/ISDN/VoIP/wireless
	• T.38 real-time fax relay, T.37 fax store and forward, fax detection, unified communications
	• Flexible redundant backhaul methods
Cisco AS5400	• Async/ISDN/Wireless data to 1 CT3
	• Universal port services (data, voice, fax) or voice only services to 16 CT1/CE1

Key Features

- The Industry's only 2RU, CT3-capable universal gateway on the market with hot-swappable cards, internal redundant power supply
- Universal Gateway which provides universal port data, voice, and fax services on any port at any time
- Feature cards: 8 or 16 CT1/CE1 feature cards; 60 or 108 channel Universal Port feature card; All feature cards and fan trays are hot-swappable
- Redundant 10/100 Ethernet ports and redundant 8 Mbps serial backhaul ports for Frame Relay, HDLC or PPP WAN Backhaul
- One fast console port for local administrative access; one auxiliary port for remote administrative access
- Redundant LAN/WAN backhaul ports
- ETSI/NEBS Level 3 compliant
- Redundant AC or DC power supply with dual fans
- Cisco SS7 signaling gateway interoperability

Competitive Products

• 3Com/CommWorks: Total Control C1000	• Lucent: Max TNT
• Alcatel: 7505 Series	• Siemens: HiPath Series

Specifications

Processor Type	Cisco AS5400HPX: 390-MHz RISC processor Cisco AS5400:250-MHz RISC processor
Calls Supported	Cisco AS5400HPX: Voice or universal port services - to 648 concurrent calls (to 20T1s/16E1s) or Remote access services - to 648 calls (to 1CT3/16E1s) Cisco AS5400: Voice or universal port services - to 480 concurrent calls (to 20T1s/16E1s) or Remote access services - to 648 calls (to 1CT3/16E1s)
SDRAM	Cisco AS5400HPX: 512 MB (default), 512 MB (maximum); Cisco AS5400: 256 MB (default), 512 MB (maximum)
Boot Flash	16 MB (default) 16 MB (maximum)
System Flash	64 MB (default) 64 MB (maximum)
Layer 3 Cache	Cisco AS5400HPX: 8 MB Cisco AS5400:2 MB
Shared input/output (I/O)	128 MB (default) 128 MB (maximum)
Feature Slots	7
Trunk Feature Cards	8 T1/E1/PRI 1 CT3
DSP Feature Card	60/180 Universal ports
LAN Protocols	IP, IPX, AppleTalk, DECnet, ARA, NetBEUI, bridging, HSRP, 802.1Q
WAN Protocols	Frame Relay, PPP, HDLC (leased line)
Routing Protocols	RIP, RIPv2, OSPF, IGRP, EIGRP, BGPv4, IS-IS, AT-EIGRP, IPX-EIGRP, Next Hop Resolution Protocol (NHRP), AppleTalk Update-Based Routing Protocol (AURP)
QoS Protocols	IP Precedence, Resource Reservation Protocol (RSVP), Weighted Fair Queuing (WFG), Weighted Random Early Detection (WRED), Multilink PPP (MMP) fragmentation and interleaving, 802.1P
Access Protocols	PPP, Serial Line Internet Protocol (SLIP), TCP Clear, IPXCP, ATCP, ARA, NBFCP, NetBIOS over TCP/IP, NetBEUI over PPP, protocol translation (PPP, SLIP, ARA, X.25, TCP, LAT, Telnet), & XRemote
Bandwidth Optimization	Multilink PPP (MLPPP), TCP/IP header compression, Bandwidth Allocation Control Protocol (BACP), Bandwidth on demand, Traffic shaping
Voice Compression	G.711, G.723.1 (5.3K and 6.3K), G.726, G.729ab, G.Clear, GSM-FR
DSP Voice Features	G.168 echo cancellation, programmable up to 128 ms Transparent transcoding between A-law and mu-law encoding Voice activity detection, silence suppression, comfort noise, fixed and adaptive jitter buffering Call progress tone detection and generation—Dial tone, busy, ring-back, congestion, and re-order tones, with local country variants Continuity Testing (COT) DTMF, MF
Voice and Fax Signaling Protocols	H.323v2, H.323v3, H.323v4, SIP, MGCP 1.0, TGCP 1.0, Voice Extensible Markup Language (VoiceXML), Real-Time Streaming Protocol (RTSP), Extended Simple Mail Transfer Protocol (ESMTP) T.37 fax store and forward T.38 real-time fax relay Fax detection Fax and modem passthrough Open Settlements Protocol (OSP) Media Recording Control Protocol (MRCP) Text to Speech (TTS) Servers Automatic Speech Recognition (ASR) Servers
SS7	Integrated SLT functionality
Network Security	RADIUS or TACACS+, PAP or CHAP authentication, local user/password database DNIS, CLID, call-type pre-authentication Inbound/outbound traffic filtering (including IP, IPX, AppleTalk, bridged traffic) Network Address Translation (NAT) and Dynamic access lists SNMPv2, SNMPv3
Virtual Private Networking	IP Security (IPSec) and Policy enforcement (RADIUS or TACACS+) L2TP, Layer 2 Forwarding (L2F), and generic routing encapsulation (GRE) tunnels Firewall security and intrusion detection
Channelized T1	Robbed-bit signaling; loop start, immediate start, and wink start protocols
Channelized E1	CAS, E1 R1, E1 R2, leased line, Frame Relay, G.703, G. 704
ISDN Protocols Supported	Sync mode PPP, V.120, V.110 at rates up to 38400 bps Network- and User-side ISDN DoVBS QSIG NFAS with backup D-channel
Modem Protocols Supported	V.90 or V.92 standard supporting rates of 56000 to 28000 in 1333 bps increments V.92 Modem on Hold, Quick Connect V.44 Compression Fax out (transmission) Group 3, standards EIA 2388 Class 2 and EIA 592 Class 2.0, at modulations V.33, V.17, V.29, V.27ter, and V.21 K56Flex at 56000 to 32000 in 2000 bps increments ITU-T V.34 Annex 12 at 33600 and 31200 bps and many others
Wireless Protocol	V.110, V.120
Full Cisco IOS Support	IP Plus and Enterprise Plus feature sets
Console and Auxiliary Ports	Asynchronous serial (RJ-45)
Chassis Dimensions (H x W x D)	3.5 x 17.5 x 18.25 in.
Chassis Weight (fully loaded)	35 lb maximum (15.8 kg)

For More Information

See the Cisco AS5400 Universal Gateways Web site: **http://www.cisco.com/go/as5400**

Cisco AS5850 Universal Gateway

The Cisco AS5850 Universal Gateway is a high-density universal gateway, with carrier-class attributes, offering highest capacity and high availability in its class. It offers high-availability features such as hot-swap on all cards, load-sharing and redundant hot-swappable power supplies, redundant blower for cooling, enhanced redundant route switch controller (eRSC) cards, and Call Admission Control (CAC), all part of the carrier class attributes required to provide a highly available system. Higher capacity configurations, depending on dial, voice, and fax application types are also supported.

The Cisco AS5850 supports a wide range of IP-based value-added services such as high-volume Internet access, corporate virtual private networks (VPNs), long distance for Internet service providers (ISPs), international wholesale long distance, distributed prepaid calling, Signaling System 7 (SS7) interconnect, and managed voice services such as hosted IP telephony, managed IP-PBX, multiservice VPNs, and IP contact centers.

Using the rich set of Cisco IOS Software features and Signaling System 7 (SS7) interconnection, service providers can quickly provision their network for new services to meet the rapidly changing demands of the communications provider marketplace.

As a highly flexible voice gateway, the Cisco AS5850 supports any coder-decoder (CODEC) at 100-percent capacity simplifying network engineering. An open programmable architecture streamlines rapid voice service creation with H.323, Session Initiation Protocol (SIP) or Media Gateway Control Protocol (MGCP).

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco AS5850	• Supporting at least 2,688 sessions of data, voice, and fax services on any port at any time using T1, E1, channelized DS3 and STM-1 trunk interfaces. Larger configurations are supported for dial, MGCP voice, TDM switching, and simple H.323 or SIP applications.
	• Service provider or IP-focused installations
	• Highly available single system with multiple redundancy
	• Wholesale dial/voice, retail dial/voice, TDM grooming or wireless applications

Key Features

- Hot-swappable redundant power supplies and power feeds
- Redundant DSPs and RSC
- Router Processor Redundancy+ for high availability
- Thermal/Power management and redundant fans
- DSP Resource Recovery Feature
- Supports H.323v2, H.323v3, H.323v4, SIP and MGCP 1.0
- Application-specific support including AOL and Prodigy traffic
- WAN optimization including routing filters, snapshot routine, dial-on-demand routing ASAP
- ETSI/NEBS Level 3 compliant
- Cisco SS7 signaling gateway interoperability
- Stratum-3 clock support
- 802.1Q/1p VLAN/ISL support

Competitive Products

- 3Com: TC 2000
- Lucent: APX 8000
- Siemens: HiPath Series
- Alcatel: 7505 Series

Specifications

Feature	Cisco AS5850
Slots	12 feature board slots 2 eRSC slots
Processor Type	650 MHz Broadcom 1250 Dual Core
RSC Switch Fabric	5 GBps, Layer 3 / 4 switching
Memory	1 GB SDRAM with ECC per RSC 128 MB SDRAM (with parity) per feature card
Trunk Cards	Single CT3 plus 216 DSP Channel feature card 24 CE1/CT1 feature card Single port Channelized STM-1 feature card
Universal Port Card	324 Channel DSP-feature card
Egress Ports	Dual Gigabit load-balanced redundant Ethernet ports with GBIC interfaces for user traffic Dual 10/100-Mbps Ethernet port with RJ45 connector for management traffic
LAN Protocols	IP
Service Support	Port Policy Management and SS7/C7
Routing Protocols	RIP, RIPv2, OSPF, IGRP, EIGRP, BGPv4, IS-IS, Next Hop Resolution Protocol (NHRP)
Access Protocols	PPP, Serial Line Internet Protocol (SLIP), TCP Clear
Bandwidth Optimization	Multilink PPP (MLPPP), TCP/IP header compression, Bandwidth Allocation Control Protocol (BACP), Bandwidth on demand, Nonfacility-associated signaling (NFAS), traffic shaping
Network Security	RADIUS or TACACS+, PAP or CHAP authentication, local user/password database, DNIS, CLID, call-type pre-authentication, Inbound/outbound traffic filtering (including IP), SNMPv2, SNMPv3
Virtual Private Networking	IP Security (IPSec) and Policy enforcement (RADIUS or TACACS+), L2TP, Layer 2 Forwarding (L2F), and generic routing encapsulation (GRE) tunnels, Firewall security and intrusion detection, IP Precedence, policy-based routing
Channelized T1	PRI, robbed-bit signaling; loop start, immediate start, and wink start protocols, SS7 IMT
Channelized DS3	PRI, robbed-bit signaling; loop start, immediate start, and wink start protocols, SS7 IMT
Channelized E1	CAS, E1 R2, PRI, SS7 IMT
Channelized STM-1	CAS, E1 R2, PRI, SS7 IMT
ISDN Protocols	Sync mode PPP, V. 120, V. 110 at rates up to 38400
Voice Protocols	G.711, G.723.1, G.726, G.729ab, G.Clear, GSM-FR H.323v2, H.323v3, H.323v4, SIP, MGCP 1.0 ECAN up to 128ms T.38 real-time fax relay Fax detection Fax and modem passthrough
Modem Protocols	V.90 or V.92 standard supporting rates of 56000 to 28000 in 1333-bps increments V.44 supporting increased throughput by more than 100 percent for Internet browsing Fax out (transmission) Group 3, standards EIA 2388 Class 2 and EIA 592 Class 2.0, at modulations V.33, V.17, V.29, V.27ter, and V.21 K56Flex at 56000 to 32000 in 2000-bps increments ITU-T V.34 Annex 12 at 33600 and 31200 bps and more
ISDN Protocols	Sync mode PPP, V.120, V.110 at rates up to 38400 bps
Wireless Protocol	V.110
Console	Asynchronous serial (RJ-45)
Chassis Dimensions (HxWxD)	24.5 x 17.5 x 24 in.
Chassis Weight	220 lb (100 kg)

For More Information

See the Cisco AS5850 Web site: **http://www.cisco.com/go/AS5850**

SS7 Signaling & Softswitch Products

Cisco PGW 2200 Softswitch

The Cisco PGW 2200 provides the signaling and call control functionality that enables service providers (SPs) to bridge the boundary between the legacy PSTN and today's new world packet networks. Combined with Cisco's award winning media gateways, the PGW 2200 is the catalyst for PSTN Gateway solutions enabling dial offload, transit, business voice, H.323 and SIP based applications. The PGW 2200 leverages its protocol library of 90+ SS7/C7 variants to enable interconnect worldwide. In signaling mode the PGW adds SS7/C7 to the AS5X00 gateways, giving service providers around the world a proven cost-saving and reliable solution for connecting VoIP and Internet Dial Access solutions to the PSTN. SS7 signaling allows service providers to enter into new markets, optimize their networks for both voice and data traffic, and save drastically on monthly interconnect fees.

Key Features:

- Peer-to-peer Interconnect with the PSTN via SS7/C7
- SS7/C7 support for carrier-class Cisco AS5x00 network access servers and voice gateways
- Flexible, distributed architecture that scales to meet customer requirements
- Calling-party analysis (A-number analysis)
- Called-party number analysis (B-number analysis)
- ANI- or CLI-based number screening with on-board database
- Overload control; Automatic congestion control (ACC)
- Advice of charge (AOC)
- E.164 and North American numbering plan (NANP) support
- Over-decadic digits
- Toll-free/800 number calls

For More Information

See PGW 2200 Web site:
http://www.cisco.com/en/US/products/hw/vcallcon/ps2027/index.html

Cisco BTS 10200 Softswitch

The Cisco BTS 10200 Softswitch offers tremendous flexibility to service providers who want to deploy local and transit services and facilitates cost reduction through grooming. The standards-based Cisco BTS 10200 Softswitch enables new, innovative, easily differentiated services for a fortified broadband services offering. Services can be quickly deployed, and time-consuming and costly upgrades to each transport element are not required-the Cisco BTS 10200 Softswitch extracts and centralizes the call-control and service applications from the transport network. In addition to telecommunications services, service providers can offer a wider range of other business and residential services, including multiservice VPNs, Web hosting, and Internet access.

Leveraging the power of packet networks while seamlessly operating with legacy circuit switched infrastructures, the Cisco BTS 10200 Softswitch empowers service providers and carriers to gracefully transition to packet-based technology. Implementing the Cisco BTS 10200 Softswitch ensures rapid service deployment, carrier-grade reliability, service flexibility, scalability to millions of subscribers, and cost savings through investment optimization and operational

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco BTS 10200 Softswitch	• Cable operators • Startup local services carriers • Resellers moving to facilities-based services • Facilities-based competitive local exchange carriers (CLECs) • Fixed-wireless carriers

Key Features

- Comprehensive industry-standard protocol support
- Carrier-grade reliability with Network Equipment Building Systems (NEBS) compliance and redundant platform components
- Interoperable with numerous commercial feature servers
- Feature server architecture, which provides an open protocol
- Streamlined maintenance, provisioning, and service activation
- Integrated access device and IP Phone support
- GUI and CLI
- Comprehensive reporting features, including billing records
- Network scalability through deployment of multiple, centrally managed call agents

For More Information

See Cisco BTS 10200 Softswitch Web site:
http://www.cisco.com/en/US/products/hw/vcallcon/ps531/index.html

Cisco uBR7100 Series Universal Broadband Router

The Cisco uBR7100 Series is a complete, compact, easy-to-use product that enables cost-effective, high-speed Internet access in the hospitality multidwelling (MDU) and multi-tenant (MTU) market space using the coaxial cable already in a building. The product requires exceptionally low capital investment and minimal setup time to provide online Internet access and support residential voice services. For Tier 2 or Tier 3 cable operators, it is the industry's most cost-effective, feature-rich CMTS and integrated router. The Cisco uBR7111 and Cisco uBR7114 models are CableLabs qualified to DOCSIS 1.0 and 1.1 specifications. The Cisco uBR7111E and Cisco uBR7114E models are tComLabs qualified to EuroDOCSIS 1.0 and 1.1 specifications. Includes support for DSG. The Cisco uBR7111 and Cisco uBR7111E contain one downstream port and one upstream port. The Cisco uBR7114 and Cisco uBR7114E contain one downstream port and four upstream ports. All models support bidirectional or telco-return traffic.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco uBR7100 Series	• For MxU customers: the Cisco uBR7100 Series enables high-value Internet and residential voice services over a DOCSIS or EuroDOCSIS cable infrastructure • For cable operators: the multi-tenant/dwelling unit (MxU) market represents an untapped opportunity to expand broadband cable service. Given the small subscriber base of a typical MxU setting, the challenge has been to deliver robust services quickly and cost-effectively for an accelerated break-even point and a quicker return on investment—enabled by the Cisco uBR7100 Series

Key Features

- Complete package that includes a full Layer 3 router and CMTS with an integrated upconverter, and embedded Network Interface, and configuration tools to provision hosts, cable modems, and set top boxes
- Standards-based: DOCSIS and EuroDOCSIS
- Reliable operation to ensure the system remains online
- Uses Cisco IOS Software

Specifications

Feature	Cisco uBR7111 and uBR7114	Cisco uBR7111E and uBR7114E
Memory	Flash: 48 MB; System: 128 MB	Flash: 48 MB; System: 128 MB
Line Card with Integrated Upconverter (Cable Plant Interface)	uBR7111: 1 downstream and 1 upstream uBR7114: 2 downstreams and 4 upstreams	uBR7111E: 1 downstream and 1 upstream uBR7114E: 2 downstreams and 4 upstreams
Integrated Upconverter	DOCSIS Annex B, 6 MHz High level output: =+61dBmV, 55 to 858 MHz Optimized for 64 and 256 QAM	DOCSIS Annex A, 8 MHz, High level output: = +61 dBmV, 55 to 858 MHz Optimized for 64 and 256 QAM
Power Options	Single; 100 to 240 VAC input voltage	Same as Cisco uBR7111 and Cisco uBR7114
Recommended Minimum Cisco IOS Software Release	12.1(19)EC1 or later	12.1(7)EC minimum
Port Adapter (WAN or backbone Interface)	Embedded dual 10/100 BaseT Ethernet (TX FE) provided; supports one additional PA that includes: Ethernet, Serial, ATM, and POS.	Same as Cisco uBR7111 and Cisco uBR7114

For More Information

See the Cisco uBR7100 series Web site:
http://www.cisco.com/en/US/products/hw/cable/ps2211/index.html

Cisco uBR7246VXR Universal Broadband Router

The Cisco uBR7246VXR Universal Broadband Router, a member of the Cisco uBR7200 Series, provides a single, Layer 3 routing, multiservice, scalable platform that gives cable companies the ability to deliver IP data, voice and video services to DOCSIS or Euro-DOCSIS-compliant cable modems and set-top boxes. The Cisco uBR7246VXR is CableLabs qualified to PacketCable 1.0, DOCSIS 1.0 and 1.1 specifications. The Cisco uBR7246VXR is tComLabs qualified to Euro-DOCSIS 1.0, 1.1, and 2.0 (ATDMA-only) specifications. The product also supports DSG.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco uBR7246VXR	DOCSIS-qualified, modular design that easily scales from small to large subscriber bases • Flexible port expansion for multiservice deployment options • Service support of up to 10,000 subscribers per chassis with 3.2 Gbps back plane[1] • Powerful processor and edge intelligence; Field proven and carrier class reliability • Support for multimedia services • High tolerance to HFC network/spectrum noise

1. Numbers are for reference only. Actual numbers for specific systems will vary depending on network/service loading, traffic, and other parameters

Key Features

- Modular design—1,000- 10,000 subscribers per chassis
- Five 9's availability for low cost maintenance
- Advanced PHY
- ATDMA / DOCSIS compliant
- Euro-DOCSIS 2.0 and DOCSIS 1.1 qualified
- Powerful Layer 3 routing intelligence and sophistication

Specifications

Feature	Cisco uBR7246VXR
Cable Line Cards and Number of Slots	4
Supported cable line cards (Cable Plant Interfaces)	uBR7200 Series MC28U, MC28X, MC16U, and MC16X Broadband Processing Engines uBR-MC14C, MC16C, MC16E, MC16S and MC28C Universal Broadband Router line cards
Port Adapter Slots (LAN/WAN interfaces)	2
Supported PA categories	Ethernet Serial HSSI ATM POS DPT
Power Supply Shots	2
Power Supply Option	AC; Dual AC; DC; Dual DC
Input/Output (I/O) controller	uBR7200-I/O uBR7200-I/O-FE uBR7200-I/O-2FE/E
I/O flash options for PCMCIA slots	Flash disk (48 MB) Flash disk (128 MB)
Network processing engines (NPE)	uBR7200-NPE-G1 and NPE-400
Add-on processor memory options	SDRAM (128 MB, 256 MB) for NPE-225 only 1 GB, 512 MB, 128 MB for uBR7200-NPE-G1
Router Bandwidth	3.2 Gbps

For More Information

See the uBR7200 Web site:

http://www.cisco.com/en/US/products/hw/cable/ps2217/index.html

Cisco uBR10012 Universal Broadband Router

The Cisco uBR10012 Universal Broadband Router addresses the volume, capacity, and complexity of large cable headends or distribution hubs. The Cisco uBR10012 delivers the highest level of service availability and capacity of any production CMTS available today. It employs a mix of distributed, centralized, and parallel processing to enable consistently high, real-world performance. The Cisco uBR10012 is CableLabs qualified to PacketCable 1.0, DOCSIS 1.0 and 1.1 specifications. The product is also tComLabs qualified to EuroDOCSIS 1.0 and 1.1 specifications. The product further supports DSG.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco uBR10012	• Large subscriber bases • Edge routing or aggregation of DOCSIS traffic • High-end throughput, capacity, and service handling • Advanced multimedia service delivery • Sophisticated Layer 3 routing intelligence • Complex network interface configurations

Key Features

- Highest density and capacity: 5,000 - 64,000 subscribers
- Powerful process and throughput
- Five 9's availability
- GE line rate -> OC-48
- Scalable performance
- ATDMA / DOCSIS 2.0
- Advanced intelligence features

Specifications

Feature	Cisco uBR10012
Modular Slots	8 slots for cable line cards 4 slots for LAN/WAN interfaces 2 slots for Performance Routing Engines (PREs) 2 slots for Timing Communication and Control Plus (TCC+) modules
Supported Cards	Cable line cards that include Cisco 5X20U BPE Timing, Communications, and Control Plus (TCC+) card Gigabit Ethernet (GE) network uplink card and OC-48 DPT Interface
Processor Type	Parallel Express Forwarding (PXF)
Flash Memory	48 MB (default); 128 MB (maximum)
DRAM Memory	512 DRAM (default)
Software Supported	Minimum software requirement: Cisco IOS Software Release 12.2(11)BC1 minimum for the Cisco 5X20 BPE, Cisco IOS Software Release 12.2(13)BC minimum for the Cisco OC-48 DPT Interface, Cisco IOS Software Release 12.3(9)BC minimum to support DSG and the Cisco PRE-2
Power Supply	DC, AC
Hot-Swappable	Yes
Backplane Capacity	51.2 Gbps
Physical Dimensions (H x W x D)	Height: 31.25 in. (79.4 cm)—18 rack units (RU) Width: 17.2 in. (43.7 cm) Depth: 22.75 in. (57.8) Mounting: 19 in. rack mountable (front or rear), 2 units per 7 ft. rack Note: Mounting in 23 in. racks is possible with optional third-party hardware
Weight	Weight: 235 lb (106.6 kg) fully configured chassis

For More Information

See the Cisco uBR10012 Web site:

http://www.cisco.com/en/US/products/hw/cable/ps2209/index.html

Cisco uBR 3x10 RF Switch

The Cisco uBR 3x10 RF Switch works with the Cisco uBR10002 and uBR7246VXR universal broadband routers to provide a fully redundant CMTS. The Cisco uBR 3x10 RF Switch accommodates three downstream switch modules and 10 upstream modules.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco uBR 3x10 RF Switch	• Carrier class N+1 network and service architecture • High density HA service support • Scalability to tens of thousands of subscribers

Key Features

• Hot swap capability that eliminates downtime for RF paths
• Support of DOCSIS, Euro-DOCSIS and PacketCable RF performance specifications
• Most comprehensive set of high availability features
• Modular upstream and downstream capacity
• Fully passive working path
• Active components only in protect path
• Position-sensing latching relays
• Unmatched port density and flexibility
• N+1 redundancy

Specifications

Feature	Cisco RF Switches
Input Power Requirements	• AC: 100 to 240 VAC, 50 or 60 Hz, operating range: 90 to 254 VAC • DC: -48 to -60 VDC, operating range: -40.5 to –72 VDC, 200 mVpp ripple/noise
Environmental	• Operational temperature range: 0 to +40°C • Operating temperature range: -5 to +55°C
Unit Control	• 10BaseT Ethernet—SNMP • Switching time from active (working) to standby (protect): 150 mS maximum after SNMP command
Connectors	• RF connectors: MCX • AC power: IEC320 type • DC power: Three terminal block • Ethernet: RJ-45 • RS-232 Bus: 9-pin male D
Reliability	• 41,000 MTBF @ +50°C as calculated by Bellcore 5, 80 percent confidence factor
Physical	• Dimensions (H x W x D): 19 x 15.5 x 5.25 in. (48.2 x 384 x 132 cm) • Weight: 36 lbs (16.4 kg)
RF requirements	• Input/output impedance: 75 ohms • Maximum RF input power: +15 dBm (63.75 dBmV) • Switch type: Electro-mechanical, absorptive for working path, non-absorptive on the protect path • Switch setting time per switch module: 20 ms maximum • Downstream frequency range: 54 to 860 MHz • Typical downstream insertion loss: +/-1.1 dB from CMTS to cable plant; +/- 2.1 dB from protect to cable plant; 5.5 dB from working to output; 8.0 dB from protect to output • Downstream insertion loss flatness: +/- 1.1 dB from CMTS to cable plant; +/- 2.1 dB from protect to cable plant • Downstream output return loss: >15.0dB at <450 MHz, > 12.0 dB at >= 450 MHz • Downstream input return loss: >15.0 dB • Downstream isolation: > 60 dB from channel to channel in working mode; > 52 dB from CMTS to protect when in protect mode • Upstream frequency range: 5 to 70 MHz • Typical upstream insertion loss: 4.1 dB from cable plant to CMTS; 5.2 dB from cable plant to protect • Upstream insertion loss flatness: +/- 0.4 dB from cable plant to CMTS, +/- 0.6 dB from cable plant to protect • Upstream input return loss:> 16 dB • Upstream isolation: > 60 dB from channel to channel in working mode; > 60 dB from CMTS to protect when in protect mode • Protect mode: CMTS return loss >10 dB, cable plant return loss: >10dB

For More Information
See the Cisco uBR 3x10 RF Switch Web site:
http://www.cisco.com/en/US/products/hw/cable/ps2929/index.html

Broadband Cable—Customer Premise Equipment (CPE)[1]

Cisco uBR905 Series Cable Access Router

The Cisco uBR905 Cable Access Router provides commercial
services for cable operators, allowing them to expand their
broadband service offerings and support IP data transmission over
a cable plant. The Cisco uBR905 offers hardware-accelerated IPSec VPN support.

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1. Cisco VoIP Residential CPE Partner Program—To help drive deployment of residential VoIP services to market, Cisco offers a program that identifies low-cost residential VoIP modems that have passed interoperability testing with Cisco. Cable service providers should contact their sales representatives for vendors, models, pricing and volume discount opportunities.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco uBR905 Cable Access Router	• Data-only broadband services (or voice separately via Ethernet) • High-speed, secure remote tunneling via hardware accelerated IPSec VPN

Key Features

- Integrated high-speed cable modem and Layer 3 router that operates with any DOCSIS 1.1 or DOCSIS 1.0-compliant CMTS; Cisco uBR905 is DOCSIS 1.1-ready
- Integrated Cisco IOS Software router, cable modem, and four-port Ethernet hub that offers advanced networking capabilities and investment protection

Specifications

Feature	Cisco uBR905
Ports	4-port 10Base-T Ethernet hub 1-port console 1-port CATV (Female F Connector)
Routing Features	NAT/PAT, DHCP Server
Security Features	56-bit IPSec 3DES IPSec optional IPSec hardware acceleration Firewall optional
Voice Support	No

For More Information

See the uBR900 series Web site: **http://www.cisco.com/go/ubr900**

Video Edge QAM Equipment

Cisco uMG9820 QAM Gateway

The Cisco uMG9820 QAM Gateway is a high-density, Gigabit Ethernet-optimized video QAM product that offers nonstop high-performance operation for VoD services. The Cisco uMG9820 QAM Gateway performs as the IP-to-MPEG-2 gateway between the Gigabit Ethernet transport network and the HFC cable network. The modular design of the Cisco uMG9820 QAM Gateway offers an initial base configuration of 8 QAM channels and scales to a maximum of 24 QAM channels in a single-rack-unit chassis. The product accepts full line-rate Gigabit Ethernet video transport feeds, providing 100% efficiency. Customers no longer need to daisy-chain QAM devices, eliminating the single point of failure present in the first QAM device in the chain. The Cisco uMG9820 QAM Gateway lowers headend/distribution hub capital expenditures and increases resiliency by reducing switching costs inherent in other QAM devices with lower densities.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco uMG9820 QAM Gateway	• Cost-effective, high-density, and scalable QAM product for North American digital video service deployments • Reduced VoD costs—Cisco uMG9820 accepts full line-rate Gigabit Ethernet transport feeds from video servers, eliminating the need to cascade multiple QAM devices • Flexible expansion—Easy for customers to add more QAM channels as VoD service grows and allows customers to purchase spare components, rather than an entire fixed-configuration system • High-availability features allow hot-swappable installation of QAM modules on active systems in operation.

Remote Cable Access—Network Management Products

Cisco Broadband Troubleshooter

Cisco Broadband Troubleshooter is an easy-to-use tool that gives network administrators and technicians a Graphical User Interface (GUI) that streamlines RF problem resolution. The tool dynamically monitors RF characteristics on a per modem or per upstream basis, provides a measurement interface for the upstream that looks and feels like a spectrum analyzer, decentralizes RF monitoring and analysis, and automatically sorts and categorizes RF problem conditions. The product provides a fault-analysis tool that enables network managers and RF technicians to quickly and easily isolate performance, cable plant, and CM problems. On-demand and scheduled diagnostics can be issued.

Cisco Broadband Troubleshooter automates reporting and expert analysis of the measured RF statistics. Diagnostics are available from both customer-account and network-event perspectives. The product allows a technician to characterize upstream and downstream trouble patterns and quickly identify "flapping" CPE devices that are experiencing persistent connectivity problems. Operators can quickly discern CPE connectivity impairments by identifying noise, attenuation, provisioning, and packet-corruption issues.

For More Information

See the Cisco Broadband Troubleshooter Web site:
http://www.cisco.com/en/US/products/sw/netmgtsw/ps530/index.html

Cisco Broadband Configurator

Cisco Broadband Configurator is an easy-to-navigate, Java-based application that simplifies the creation and maintenance of configuration files for PacketCable 1.0 media terminal adapters (MTAs) and DOCSIS 1.0 and 1.1 cable modems. The product provides a simple-to-use, forms-based approach that leads cable operators through the process of configuring or editing values of a configuration file. These values include RF parameters, vendor information, DOCSIS 1.0 class of service, DOCSIS 1.1 service flow or Service Flow Identifiers (SFIDs), Simple Network Management Protocol (SNMP) values, DOCSIS 1.0 baseline privacy (BPI), DOCSIS 1.1 BPI+, as well as customer premises equipment (CPE) data.

For More Information

See the Cisco Broadband Configurator Web site:
http://www.cisco.com/en/US/products/sw/netmgtsw/ps819/index.html

Cisco Cable Diagnostic Manager

Cisco Cable Diagnostic Manager is an automated, web-based tool that enables customer service representatives (CSRs) to quickly diagnose problems with DOCSIS networks, better handle subscriber inquiries, and improve the routing of trouble tickets. The tool provides first-line CSR troubleshooting and support. Cisco Cable Diagnostic Manager enables a CSR to quickly identify to a customer reporting a problem with their cable modem service if the problem resides with the cable modem (CM), set top box (STB), hybrid fiber coax (HFC) cable plant segment, the CMTS, or a provisioning server. The CSR simply enters a customer identifier such as the customer's phone number, assigned IP address, or cable modem media access control (MAC) address to obtain relevant information.

Cisco Cable Diagnostic Manager uses Simple Network Management Protocol (SNMP), DOCSIS, and Cisco-extension management information bases (MIBs) to retrieve real-time information from the CMTS and CM or STB. The product uses scripts to poll subscriber and provisioning information from appropriate databases. Gathered information is presented using color-coding to help CSRs identify problems at-a-glance. CSRs can then know how to route problems appropriately.

For More Information

See the Cisco Cable Diagnostic Manager Web site:
http://www.cisco.com/en/US/products/sw/netmgtsw/ps3825/index.html

DSL Remote Access—Customer Premise Equipment (CPE)

Cisco offers the industry's broadest array of business-class DSL (G.SHDSL and ADSL) CPE solutions, from Enterprise to branch office, to Small Office/Home Office (SOHO) applications. Cisco's CPE solutions offer the choice of key features including Firewall, VPN, and Voice-over DSL support. And, Cisco's industry leading IOS-based capabilities enable QoS, policy management, and standardized set-up and configuration. Cisco CPE Products include:

- Cisco SOHO Series Ethernet, ADSL over ISDN, ADSL and G.SHDSL Routers (page 1-8)
- Cisco 800 Series Routers (page 1-9)
- ADSL and G.SHDSL WAN Interface Cards (WICs) for 1700, 1800, 2600XM, 2800 and 3800 Series (see Chapter 1: Routing)

Note   Refer to Chapter 1: Routing section for easy-to-order xDSL bundles.

Broadband Services Aggregation

The Cisco broadband aggregation portfolio includes the Cisco 7200 Series Router, the Cisco 7301 Series Internet Router, and the Cisco 10000 Series Internet Router. This portfolio covers all possible broadband aggregation markets. The Cisco 10000 Series routers is a carrier class broadband aggregation router designed to provide high-density, high-performance services while maintaining the high-availability standards of large-scale carrier deployments. The Cisco 7200 and Cisco Series routers cover the ISP and retail space by providing a dense, feature-rich platform but only taking a small footprint in the network.

• Cisco 7301: Highest Density PPP aggregation per rack-unit

• Cisco 7200: Most versatile platform

• Cisco 10000: Highest availability on a carrier-class integrated edge router

With this portfolio, Cisco can address the broadest set of requirements in terms of form factor, density, performance and scale, and offer customers a unique level of choice, with products optimized for any customer deployment.

Cisco 7200 Series

When ordered with the Cisco IOS 7200 Series Broadband User Services License (part number FR-BUS72), the 7200 delivers scaled PPP, RBE, and L2TP sessions and tunnels in addition to rich IP services. It enables service providers to provision broadband Internet access and supports all of the popular access technologies deployed today, including DSL, Cable, Wireless, and Dial Access. It is ideal for low- to medium-density applications and is capable of handling up to 16000 subscribers in a single chassis. The 7200 is a modular platform with a choice of processing engines and a wide variety of WAN and LAN port adapters, including T1/E1, DS3, OC-3, Fast Ethernet, and Gigabit Ethernet. See page 1-36 for more information on the 7200 series.

Cisco 7301 Series

When ordered as 7301-BB-8K and 7301-BB-16K (16K License) the Cisco 7301 Series Router provides a compact, high-performance single-rack-unit (1RU) router coupled with a broad set of interfaces and Cisco IOS® Software features, which makes it ideal for Broadband applications. The Cisco is capable of handling up to 16,000 simultaneous sessions and allowing for a pay-as-you-grow "rack and stack" architecture.

Cisco 10000 Series

The Cisco 10000 is the industry's only integrated edge router that delivers highly available, line-rate performance without compromises for service providers deploying advanced IP services to broadband, leased line, ATM, and Frame Relay customers. With 99.999 percent uptime, the platform delivers high-performance broadband features including support for 61,500 broadband subscribers, hardware-accelerated PPP over Ethernet and PPP over ATM, routed bridge encapsulation and 1483 routing. New to the Cisco 10000 is support for Ethernet 802.1Q VLANs and QinQ further broadening the spectrum of encapsulations. See page 1-45 for more information on the 10000 series.

ATM Multiservice WAN Switching

Cisco BPX 8600 Series—Advanced ATM Multiservice Switches

The Cisco BPX 8600 series is an ATM switch with advanced IP and ATM capabilities. Designed to meet the demanding, high-traffic needs of a public service provider or large private enterprise, the BPX switch delivers high-performance ATM switching, multiservice adaptation and aggregation for all types of user traffic. Proven in the world's largest ATM and Frame Relay networks, the BPX 8600 enables service providers and large enterprises to meet skyrocketing network demands.

The Cisco BPX 8600 series switch offers up to 20 Gbps of high-throughput switching for multiple traffic types data, voice, and video and supports a wide range of interfaces, from Frame Relay to full broadband subscriber interfaces, up to 622 Mbps with a connection to an Edge Concentrator. You can offer multiple services for LAN, X.25, SNA, IP, Frame Relay, and ATM traffic from a single BPX platform. The Cisco BPX 8600 series supports multiprotocol label switching (MPLS).

For More Information

See the Cisco BPX Web site: **http://www.cisco.com/go/bpx**

Cisco MGX 8850 ATM Multiservice Switch

The Cisco MGX 8850 ATM Multiservice Switch enables delivery of a complete portfolio of service offerings while scaling from DS0 to OC-48c/STM-16 speeds. It enables service providers to be first to market with high-margin voice and data services while maintaining existing services. The MGX 8850 universal chassis provides a unified ATM architecture that delivers a complete portfolio of differentiated services —from circuit emulation to IP VPNs—all with a single chassis, to enable service providers to easily add new services.

The Cisco MGX 8850 can function in three different modes of operation:

- PXM-1 configuration—Operates as a stand-alone device for narrowband services, or as an integrated edge concentrator for the Cisco BPX 8600 series or the Cisco MGX 8850 PXM-45
- PXM-1E configuration-Operates as a stand alone switch for low density narrowband services, it includes a 1.2 Gbps switch card and PNNI routing
- PXM-45 configuration—Serves as a broadband edge switch and includes the 45 Gbps switch card and broadband ATM modules. The PXM-45 configuration also supports standards-based PNNI routing.

Key Features

- Flexible ATM multiservice platform
- Highly scalable—from 1.2 to 45 Gbps of non-blocking throughput in single chassis
- Highest reliability, availability, and serviceability in the industry
- IP VPNs using Cisco IOS software-based Multiprotocol Label Switching (MPLS)
- Market-leading Frame Relay capabilities, with price-per-port leadership and advanced QoS
- High-density Point-to-Point protocol (PPP) for Internet access and aggregation
- Full-featured narrowband ATM for managed data, voice, and video services; high-density broadband ATM for wholesale ATM services
- Circuit Emulation for Private Line replacement
- Highly scalable packet voice gateway providing VoIP, VoATM(AAL1 & AAL2), ATM SVCs, and Onboard MPLS

For More Information

See the Cisco MGX 8850 Web site: **http://www.cisco.com/go/mgx8850**

Cisco MGX 8830 ATM Multiservice Switch

The Cisco MGX 8830 Advanced ATM Multiservice Switch extends a full suite of narrowband interfaces and broadband trunking to remote sites with low density and high service mix requirements, using PNNI and MPLS are used for flexible network and services evolution. The Cisco MGX 8830 has a switching capacity of up to 1.2 Gbps and acts as a standalone switch. It offers a full range of service interfaces.

For More Information

See the Cisco MGX 8830 Series Web site: **http://www.cisco.com/go/mgx8830**

Cisco Long Reach Ethernet Solution

Cisco LRE enables the transport of symmetrical, bi-directional data over unshielded, copper twisted-pair telephone wires originally intended for the frequency bands used for traditional telephone voice services (300 Hz and 3.4 KHz). The system employs Frequency Division Duplexing (FDD) to separate the downstream channel, the upstream channel, and POTS, ISDN, or PBX signaling services in the frequency domain. This enables users to overlay LRE on existing POTS, ISDN, or analog PBX signaling services without disruption, extending intelligent Ethernet services at distances of up to 5000 over existing phone or legacy wiring. Both LRE and POTS/ISDN/analog PBX services may be transmitted over the same line without interfering with each other.

The Cisco 2950 LRE solution includes the Cisco Catalyst® 2950 LRE switches, the Cisco 575 and 585 LRE Customer Premise Equipment (CPE) devices, and the Cisco LRE POTS Splitter. Each LRE link is terminated with either the Cisco 575 or 585 LRE CPEs, and a POTS splitter is required when POTS traffic coexists with the LRE link over the same line.

Catalyst 2950 LRE Series Intelligent Ethernet Switches

The Cisco Catalyst® 2950 LRE switches are fixed-configuration, stackable models that provide wire-speed LRE and Gigabit Ethernet connectivity for small and midsized networks. The Catalyst 2950 Series is an affordable product line that brings enhanced security, high availability and advanced quality of service (QoS), to the network edge-while maintaining the simplicity of traditional LAN switching. When a Catalyst 2950 LRE switch is combined with a Catalyst 3550 Series switch, the solution can enable IP routing from the edge to the core of the network. Embedded in Catalyst 2950 Series switches is the Cisco Cluster Management Suite (CMS) Software, which allows users to simultaneously configure and troubleshoot multiple Catalyst desktop switches using a standard Web browser. In addition to CMS, Cisco Catalyst 2950 LRE switches provide extensive management tools using Simple Network Management Protocol (SNMP) network management platforms such as CiscoWorks for Switched Internetworks.

The two built-in Gigabit Ethernet SFP ports support 1000BASE-SX and 1000BASE-LX modules. The dual SFP-based and copper Gigabit Ethernet implementation provides customers with tremendous deployment flexibility-allowing customers increased availability with the redundant uplinks. High levels of stack resiliency can also be implemented by deploying dual redundant Gigabit Ethernet uplinks and UplinkFast technologies for high-speed uplink and stack interconnection failover, and Per VLAN Spanning Tree Plus (PVST+) for uplink load balancing.

Cisco 575 and 585 LRE CPE Devices

Each LRE port is terminated in the room with either the Cisco 575 or 585 LRE Customer Premise Equipment (CPE) devices. These compact devices bridge LRE and Ethernet. The 575 CPE has one RJ-45 Ethernet connection and two RJ-11 connectors—one for the wall and one for a telephone. The 585 CPE has four RJ-45 switched Ethernet connections and two RJ-11 connectors and supports 802.1p QoS so that voice and video traffic are prioritized over normal data traffic. Both the Cisco 575 and 585 LRE CPE device can be mounted on or under a desk, or on a wall. They ship with a mount lock-in mechanism and clip-on Ethernet cable guard to discourage theft. It supports voice (Plain Old Telephone Service—POTS) traffic-including ISDN or digital phones-that coexists over the same LRE line by splitting LRE and POTS traffic at the CPE device.

Cisco LRE 48 POTS Splitter

The Cisco LRE 48 POTS Splitter is a high-density, low-cost device that is ideal for building deployments where the PBX system is on-site and POTS traffic must coexist over the same copper wiring as LRE traffic. Unlike "splitterless" building broadband network solutions, the Cisco LRE 48 POTS Splitter ships as a separate, compact form factor to ensure that POTS service is separate, and never compromised by LRE switch reconfigurations or downtime.

The Cisco LRE 48 POTS Splitter supports 48 ports in a 1RU form factor. Each splitter has six RJ-21 connectors-two each for connectivity to the patch panel, the LRE switch(es), and the on-site PBX system.

Key Features

- Performance—Delivers 2-15 Mbps symmetric over existing category 1/2/3 wiring at distances up to 5000 feet. Rate Selection feature automates the process of selecting a data rate for a line for ease of installation and increased robustness.
- Powerful Gigabit Ethernet uplink options—1000BaseT and SFP ports
- Superior control through intelligent services—advanced quality of service and security based on Layer 2 through Layer 4 parameters.
- Multicast support—Multicast VLAN Registration (MVR) and IGMPv3 Snooping.
- Enhanced Cisco IOS Services
- Network Management—Cisco Switch Clustering technology and the advanced, Web-based Cisco Cluster Management Suite (CMS) software deliver easy-to-use configuration and ongoing monitoring and management of up to 16 switches. This software is embedded in the switches and delivers remote management of clustered switches and connected CPE devices through a single IP address

Competitive Products

- Paradyne Networks: BitStorm solution (Etherloop) and ReachDSL products
- Tut Systems: IntelliPOP VDSL
- Huawei: Quidway s3026v

Specifications

Feature	Cisco 2950ST 24 LRE	Cisco 2950ST 8 LRE
Fixed Ports	24 LRE ports + 2 10/100/1000BASE-T ports + 2 Small Form-Factor Pluggable (SFP) ports (two of the four uplinks active at one time)	8 LRE ports + 2 10/100/1000BASE-T ports + 2 SFP ports (two of the four uplinks active at one time)
Backplane	8.8 Gbps	Same as Cisco 2950ST 24 LRE
Forwarding Rate	3.5 Mpps	3.2 Mpps
VLAN Maximum	250 port based VLANs or ISL/802.1Q trunks	Same as Cisco 2950ST 24 LRE
FEC	Yes	Same as Cisco 2950ST 24 LRE

Feature	Cisco 2950ST 24 LRE	Cisco 2950ST 8 LRE
802.1Q	Yes	Same as Cisco 2950ST 24 LRE
Multicast	IGMPv3 Snooping, IGMP Throttling	Same as Cisco 2950ST 24 LRE
QoS	802.1 p, 4 egress queues, WRR, Layer 3 and 4 services	Same as Cisco 2950ST 24 LRE
Management Capabilities	SNMP, Telnet, RMON, CW2000, CLI-based out-of-band, embedded Cisco Cluster Management Suite (CMS), Web-based interface	Same as Cisco 2950ST 24 LRE
Memory	84 MB (Flash); 32 MB (CPU DRAM)	Same as Cisco 2950ST 24 LRE
Embedded RMON	History, Events, Alarms, Statistics	Same as Cisco 2950ST 24 LRE
Dimensions (HxWxD)	1.75" (44.5 mm) x 17.5" (444.5 mm) x 9.7" (246.6 mm)	Same as Cisco 2950ST 24 LRE

Selected Part Numbers and Ordering Information[1]

Catalyst 2950 LRE Series Switches

WS-C2950ST-24-LRE	Catalyst 2950 LRE switch: 24-port LRE + 2 10/100/1000BASE-T ports + 2 SFP ports
WS-C2950ST-8-LRE	Catalyst 2950 LRE switch: 8-port LRE + 2 10/100/1000BASE-T ports + 2 SFP ports

Cisco 575 and 585LRE CPE Device

CISCO575-LRE	Cisco 575 LRE CPE device: 1-port Ethernet + 2 RJ-11 connectors
CISCO575-LRE-6P	Cisco 575 LRE CPE device (6 pack): 1-port Ethernet + 2 RJ-11 connectors
CISCO575-LRE-24P	Cisco 575 LRE CPE device (24 pack): 1-port Ethernet + 2 RJ-11 connectors
CISCO585-LRE	Cisco 585 LRE CPE device: 4-port Ethernet + 2 RJ-11 connectors
CISCO585-LRE-6P	Cisco 585 LRE CPE device (6 pack): 4-port Ethernet + 2 RJ-11 connectors
CISCO585-LRE-24P	Cisco 585 LRE CPE device (24 pack): 4-port Ethernet + 2 RJ-11 connectors

Cisco LRE 48 POTS Splitter

PS-1M-LRE-48	Cisco LRE 48 POTS Splitter: 48 ports

1. This is only a small subset of all parts available via URL listed under "For More Information." Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the *Distribution Product Reference Guide* at: http://www.cisco.com/dprg (limited country availability).

For More Information

See the LRE Web site: **http://www.cisco.com/go/lre**

Cisco Building Broadband Service Manager (BBSM) Version 5.3

Cisco Building Broadband Service Manager (BBSM) is an access gateway for public access networks that enables simple, plug-and-play access, end user self-provisioning of services, customizable portal and advertising platforms and Web-based management, reporting and configuration. In addition, multiple automated authentication and billing options are supported, including credit card, RADIUS, property management system and access code. The Cisco BBSM platform manages Internet access services with no routine IT support, enabling venues to offer services in remote and unattended locations. BBSM supports tiered service levels in order to deliver targeted customer offerings. For instance, a hotel can set-up daily network access for a series of meetings providing a variety of bandwidth/pricing options to capture lucrative meeting room revenue opportunities. LAN products to provide a complete solution that enables venues to create, market and operate broadband access services in   markets such as: Hospitality, Higher-Education, Healthcare, Retail, Enterprise guest access, and Public Access.

Cisco BBSM Hotspot Server Version 5.3

The Cisco Building Broadband Service Manager (BBSM) Hotspot server connects mobile users to broadband services anywhere, anytime. Cisco BBSM Hotspot is a cost effective access management gateway suited for small- to medium-sized public access locations, as well as for guest access in enterprise locations. BBSM Hotspot enables simple plug-and-play connectivity, end user self-provisioning of services, and multiple authentication options.

BBSM Hotspot works with Cisco Local Area Network (LAN) products to provide a complete solution for secure wired and wireless Internet Access for visitors, contractors, patients, and other temporary users. Use Cisco BBSM Hotspot to manage and operate broadband access services in public hotspots, small hotels, and public overlays on enterprise networks.

For More Information

See the BBSM Web site: **http://www.cisco.com/go/bbsm**

C H A P T E R

8

Optical Networking

Optical Networking at a Glance

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CHAPTER 8 OPTICAL NETWORKING sidebar

Product	Features	Page
Cisco ONS 15216 and 15501 Optical Transmission Families	Cisco ONS 15216 Metro DWDM Series • Supports 32 ITU-grid wavelengths at 100 GHz spacing and provides unprecedented transport flexibility with optical filtering • Combines wavelengths launched by the Cisco ONS 15454, and ONS 15530-creates a more desirable cost per-wavelength • Optical Add/Drop Multiplexing (OADM) • Optical Performance Monitoring and Amplification • Compact, modular design Cisco ONS 15501 Optical Amplifier • Constant flat gain of 17 dB over the 1530nm to 1563nm band simplifies network design. • Metro optimized auto gain control and variable gain • Low noise figure of <6.0 dB allows the use multiple amplifiers in cascade • Input power range of -29 to 0 dBm	8-3
Cisco ONS 15302/15305 SDH Multiservice Provisioning Platforms (MSSPs)	Ultra-compact integrated systems that extend next-generation optical networks (access nodes or CPE): • Low-cost access/customer premise equipment (CPE) platform • E1, E3, DS3, 10/100 BaseT Ethernet and GigE • STM-1 (15302) or STM-1/4/16 (15305)	8-4
Cisco ONS 15310 SONET Multiservice Provisioning Platform (MSPP)	Compact 1 RU single system controller design, optimized for data and TDM services over protected SONET transport. • 1RU AC or dual-DC power chassis • Single system controller/timing/synchronization • 2x small form-factor pluggable (SFP) optical ports for rings • 21 DS1s, 3 DS3s • 1 expansion slot • Fan-cooled	8-4
Cisco ONS 15327 SONET Multiservice Provisioning Platform (MSPP)	Integrated optical networking platform and unprecedented multiservices on demand: • Offers optimized bandwidth management, high-speed IP-based data services, rapid service provisioning, and multiple optical interfaces • Aggregates and switches TDM10/100 BaseT Ethernet and GigE, data and video services • Compact footprint (3 rack-units), modular design and industrially hardened	8-4
Cisco ONS 15454 SONET/ SDH Multiservice Provisioning Platform (MSPP)	Integrates the functions of legacy SONET or SDH network elements with next-generation SONET/SDH transport, integrated DWDM optical networking, and multiservice interfaces: • Aggregated lower-rate TDM services from DS-1/E1 over 2.5-Gbps and 10-Gbps wavelengths • SONET/SDH wavelength and aggregated services—OC-3/STM-1, OC-12/STM-4, OC-48/STM-16, OC-192/STM-64 • Data services—private-line, switched and wavelength-based, including 10/100BASE-T, Gigabit Ethernet, 10 Gigabit Ethernet LAN physical layer, and 10 Gigabit Ethernet WAN physical layer • Storage services—1-Gbps and 2-Gbps Fibre Channel, 10-Gbps Fibre Channel, IBM Fiber Connection (FICON), and Enterprise Systems Connection (ESCON), ETR/CLO, ISC-1 • Video services—D1 and high-definition television (HDTV) • Combines multiplexing, optical networking, and switching functionality in one easy-to-use platform that supports all metro topologies	8-4
Cisco ONS 15500 Metro DWDM Series	Designed for carrying mission critical storage, data, and legacy applications over a highly available metro optical DWDM network: • Offers a market-leading service aggregation capabilities for services such as ESCON, Fibre Channel, FICON, and Gigabit Ethernet • The ONS 15540 ESPx system offers external cross connect functionality and supports high-density transparent services (e.g., 1Gb and 2Gb Fibre Channel, Gigabit Ethernet, SONET/SDH) and enhanced configuration flexibility	8-5

Optical Networking at a Glance   **8-1**

Product	Features	Page
Cisco ONS 15501 Erbium Doped Fiber Amplifier	• Designed for Enterprise and Service Provider environments • Low-noise, gain flattened C-band optical amplifier • Complements the Cisco ONS 155xx DWDM solution • Capable of extending 100GHz, 32-channel, 2.5Gbps / 10Gbps optical infrastructure over longer distances	8-5
Cisco ONS 15530 Metro DWDM Aggregation Platform	High-density and scalable dense wavelength division multiplexing (DWDM) multiservice aggregation platform • Ideal for both enterprises and managed service providers • Network consolidation of storage, data, and legacy applications • Up to 8 Fibre Channel / FICON / GbE services or up to 40 ESCON services per wavelength • New—Support for up to 4-ports of 2 Gbps Fibre Channel services per wavelength • New—8-port Multi Service Muxponder supports up to 8 multiservice interfaces (T1/E1, OC3-STM-1, ESCON, D1 Video, FE, GE, 1GFC, and ITS) per wavelength • Scales from 2.5Gbps to 10Gbps • Supports wide range of protocols over a highly-available optical infrastructure • Highly resilient network with flexible topology design options	8-5
Cisco ONS 15540 Extended Services Platform	Highly modular and scalable next-generation Dense Wave Division Multiplexing (DWDM) platform offering Industry Leading Wavelength Density • Ideal for enterprises requiring Business Continuance (BC) and Disaster Recovery (DR) Solutions and service providers offering Enterprise Business Continuance (BC) and Disaster Recovery (DR) Managed Services • Delivers the integration of data, storage and metro networking • Ultra-high bandwidth intelligent optical infrastructure	8-6
Cisco ONS 15454 Multiservice Platform (MSTP)	Delivers integrated, intelligent DWDM functionality for metropolitan and regional networks (up to 32 wavelengths per node): • Aggregated lower-rate TDM services from DS-1/E1 over 2.5-Gbps and 10-Gbps wavelengths • SONET/SDH wavelength and aggregated services—OC-3/STM-1, OC-12/STM-4, OC-48/STM-16, OC-192/STM-64 • Data services—private-line, switched and wavelength-based, including 10/100BASE-T, Gigabit Ethernet, 10 Gigabit Ethernet LAN physical layer, and 10 Gigabit Ethernet WAN physical layer • Storage services—1-Gbps and 2-Gbps Fibre Channel, 10-Gbps Fibre Channel, IBM Fiber Connection (FICON), and Enterprise Systems Connection (ESCON), ETR/CLO, ISC-1 • Video services—D1 and high-definition television (HDTV)	8-7
Cisco ONS 15600 Multiservice Switching Platform (SONET/SDH)	Allows service providers to seamlessly integrate their metro core and metro edge networks, while dramatically reducing initial turn up costs. • Provides 320 gigabits of switching, grooming, aggregation, and bandwidth management capacity in a single shelf • Supports 32, OC-192/STM-64 long reach or 128, OC-48/STM-16 long reach optical interfaces in a single shelf • Combines the functionality of multiple metro systems including SONET/SDH multiplexers and digital cross-connect network elements • Provides carrier-class availability, serviceability, and management • Scalable, easy-to-use platform supports all metro topologies	8-8
Cisco Transport Manager (CTM 5.0)	Advanced optical transport domain manager that delivers element and network management layer functionality: • Efficiently manages the entire Cisco ONS product family and Cisco CR-12000 Series routers • Provides a resilient, adaptable, and integrated carrier-class EMS solution • Powerful GUI-based management system makes advanced management capabilities such as A-to-Z circuit provisioning easy to learn and use • Cost-effective, using industry-standard platforms such as Sun Solaris, Oracle, and Microsoft Windows to fit smoothly into various IT environments • Offers a variety of northbound interface options (e.g., SNMP, TL1 and CORBA)	8-8
Cisco 10720 Internet Router	Service provider-class metro access services router • Equipped with 24 ports of Ethernet technology for customer access and dynamic packet transport (DPT) technology for metro optical connectivity • With DPT architecture, enables optimal fiber connectivity as well as features such as IP class of service, TLS, VoIP and VPN services See Chapter 1—Routers for more information on the Cisco 10720 Internet Router	1-47

Sample Metro Optical Transport Solution Overview
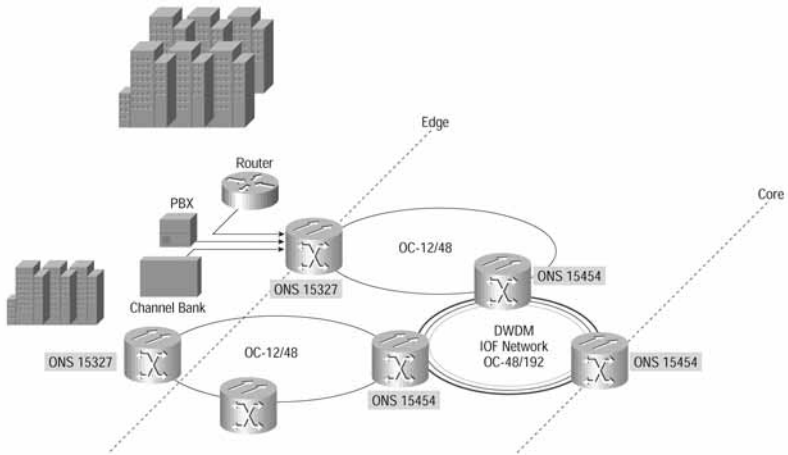
Cisco ONS 15216 Metro DWDM Series

The Cisco ONS 15216 Metro DWDM solution supercharges wavelength services by supporting up to 32 ITU-grid wavelengths, and provides unprecedented transport flexibility with optical filtering, Optical Add/Drop Multiplexing (OADM), Optical Performance Monitoring and Amplification. It allows service providers to deliver more services per wavelength and more wavelengths per fiber.

The Cisco ONS 15216 Metropolitan Dense Wavelength-Division Multiplexing (DWDM) FlexLayer filter solution is an ultraflexible filter architecture that allows cable multiple system operators and service providers to build "pay-as-you-grow" networks with the flexibility to upgrade in-service without preprovisioning channels that are not required. This approach creates a more desirable per-wavelength cost.

The FlexLayer architecture allows for deployment of point-to-point, point-to-multipoint, ring, bus, and tree-and-branch architectures. These networks can be deployed as unprotected or protected networks, and they may also be deployed in transmit-only applications for broadcast networks. This flexibility is inherent in the design of the FlexLayer architecture.

For More Information

See the ONS 15216 Metro DWDM System Web site:
http://www.cisco.com/en/US/products/hw/optical/ps1996/ps1999/index.html

Cisco ONS 15302/15305 SDH Multiservice Access Platforms (MSAP)

The Cisco ONS 15302/ONS 15305 Multiservice CPE and
Aggregation solutions are ultra-compact integrated systems that offer cost effective solutions. These platforms provide native multiservice capabilities (i.e., TDM interfaces, multiplexing and Ethernet data interfaces).

The ONS 15302 CPE platform provides the STM-1 uplink (protected or unprotected STM-1 optical uplink, 1+1 MSP, future SNCP) and E1 customer interfaces (12 E1 ports) interfaces. It provides native Ethernet customer access via 4-port 10/100BaseT module that supports full layer 2 capacity, bridging, VLANs, spanning tree, and priority management. An optional WAN module is available for point to multi-point applications.

The ONS 15305 Aggregation platform provides the following TDM interfaces— protected or unprotected optical interfaces (8 port S-1.1 optical module, 2 port S-4.1 optical module, 1 port S-16.1 optical module, 1+1 MSP, SNCP, 2F MS-SPRing for STM-16) and electrical customer interfaces (8 and 63 port E1 modules and a 6 port E3/DS3 module). This product also provides native Ethernet customer access via an 8-port 10/100BaseT module and a 2-port GigE module (supports full layer 2 capacity, bridging, VLANs, spanning tree, and priority management). An optional WAN module is available for point to multi-point applications.

For More Information

See the ONS 15302/ONS 15305 web site: **http://www.cisco.com/go/ons15300**

Cisco ONS 15454 and 15327 Multiservice Provisioning Platforms

The Cisco ONS 15454 and ONS 15327 Multi-service Provisioning Platforms (MSPP) are key building blocks in today's optical networks due to their unprecedented transport performance and economics. They offer
supercharged transport capability by combining the best of traditional SONET TDM (time division multiplexing) and statistical multiplexing in single units.

The Cisco ONS 15454 aggregates traditional facilities such as DS1, DS3, STS-1, OC-3, OC-12, and OC-48 including multi-wavelength DWDM optics, but it also supports data interfaces for 10/100/GigE, data and video. This enables drastically improved efficiencies in the transport layer and breakthrough cost savings for initial and life cycle deployment. A single ONS 15454 shelf can support combinations of OC-3/c, OC-12/c, OC-48/c, and OC-192.

The new Cisco ONS 15454 SDH MSPP offers an international optical transport solution that combines the best of traditional SDH TDM and statistical multiplexing in a single platform. The Cisco ONS 15454 SDH MSP can aggregate traditional services such as E1, E3, DS3, STM-1, STM-4, STM-16 and STM-64 including multi-wavelength DWDM optics, but is also designed to support data interfaces such as Ethernet/IP.

The Cisco ONS 15327 combines industry-leading bandwidth capacity and service diversity in a very compact footprint, enabling service providers to achieve radical economics at the metro edge. Based on the same technology as the industry leading Cisco ONS 15454, the ONS 15327 supports high optical bandwidth and has the ability to drop a DS1 from an OC-48 stream. With comprehensive STS- and VT-level bandwidth management and integrated data switching, the Cisco ONS 15327 also serves as a digital cross-connect without the need for additional equipment. It aggregates and switches TDM, Ethernet, and ATM services, and can be managed using the Cisco Transport Manager element management system.

For More Information

See the ONS 15454 SONET Web site: **http://www.cisco.com/go/ons15454**

See the ONS 15454 SDH Web site: **http://www.cisco.com/go/15454sdh**

See the ONS 15327 Web site: **http://www.cisco.com/go/ons15327**

Cisco ONS 15501 Erbium Doped Fiber Amplifier

The Cisco ONS 15501 is a low-noise, gain-flattened C-band optical erbium doped fiber amplifier designed to extend the distance of today's metro high-bandwidth optical network beyond existing optical budget constraints. The Cisco ONS 15501 complements the Cisco ONS 155xx DWDM and Catalyst 6500 solutions, providing customers with the capability to extend their 2.5-Gbps or 10-Gbps optical infrastructures over greater distances. Packaged in a one-rack-unit (1RU) chassis, the Cisco ONS 15501 incorporates features such as 17-dB constant flat gain, automatic gain control, and low noise figure for excellent Optical Signal to Noise Ratio (OSNR) characteristics.

For More Information

See the Cisco ONS 15501 Web site: **http://www.cisco.com/go/ons15501**

Cisco ONS 15530

The Cisco ONS 15530 is a highly scalable dense wavelength division multiplexing (DWDM) multiservice aggregation platform that integrates storage, data networking, and legacy applications over an ultra-high-bandwidth, intelligent optical infrastructure. The ONS 15530 supports Fibre Channel extension over DWDM via buffer-to-buffer credit support to significantly increase disaster recovery distances; Industry-leading aggregation of IBM Coupling Facility Links used in IBM GDPS storage networks; New Low-band Variable Rate Small Form-factor Pluggable Optics for expanded protocol support.

Key Features

- New—ONS 15530 4-Port 1-Gbps/2-Gbps Fibre Channel Aggregation Card provides efficient wavelength usage by aggregating up to four 2-Gbps Fibre Channel, IBM Fiber Connection (FICON), and IBM Intersystem Channel (ISC) services onto a single 10-Gbps wavelength

- New—8-port Multi Service Muxponder provides the aggregation of up to 8 low speed services such as T1/E1, OC3-STM-1, ESCON, D1 Video, FE, GE, 1 Gbps FC, and ITS per 2.5 Gbps wavelength

- Industry leading Service Aggregation—up to 4 ports of 2 Gbps Fibre Channel, up to 8 ports of Fibre Channel, FICON, or Gigabit Ethernet or up to 40 ports of ESCON per wavelength

- Capacity—Fiber capacity is maximized when used with a 32-wavelength system providing up to 256 Fibre Channel, FICON, or Gigabit Ethernet services or up to 1280 ESCON services on a single fiber pair.

- Scalability—up to 32 wavelengths ranging from 2.5 Gbps to 10 Gbps

- Multiservice Interfaces—Customers have a single scalable platform that supports low speed copper legacy services such as T1/E1 (PBX interconnect), OC-3/STM-1, Fast Ethernet and D1 Video, in addition to high density ESCON, GE, and 1Gb FC services

- Service mixing—Ability to mix a combination of Fibre Channel, FICON, ESCON, and Gigabit Ethernet services over the same wavelength

- Complete Amplification Solution—Enables enterprises and service providers to further expand their optical DWDM networks over greater distances when used with the ONS 15501 EDFA optical amplifier and the VOA (Variable Optical Attenuator) modules

For More Information

See the Cisco ONS 15530 Web site: **http://www.cisco.com/go/ons15530**

Cisco ONS 15540 Extended Services Platform (ESPx)

The ONS 15540 Extended Services Platform with external cross connect capability (ESPx) is a highly modular, flexible, and scalable next generation dense wave division multiplexer (DWDM) platform that integrates data networking, storage area networking (SAN), time division multiplexing, (TDM) Synchronous Optical Network (SONET) and Synchronous Digital Hierarchy (SDH) technologies over an ultra high bandwidth, intelligent optical infrastructure that can support any packet, over any wavelength on any platform.

- Flexible Multi-Protocol Support—The Cisco ONS 15540 offers both variable rate transparent and fixed rate multi-protocol transponders that feature user selectable small form factor pluggables (SFPs) and support a variety of industry standard data rates between 16Mbps to 2.5Gbps as well as 10Gb Ethernet

- Scalable, flexible, and modular architecture in a high-density compact footprint— Provides superior operational support and network expansion on an as needed basis through its hot swappable modular lines cards, transponders, and optical multiplexers

- Simple Network Consolidation and Comprehensive Multi Service Support provided by the available ONS 15540 2.5GB and 10GbE transponders

- Optical, Service, and Application Level Performance Monitoring—provides industry-leading supports for service level agreements (SLAs)

- High Availability for mission critical networks—Provides 99.999% availability for demanding Managed Network Service Providers and enterprise business continuance applications, with hardware redundancy and automatic protection switching to protect against fiber cuts and equipment failures

- Multi-Service Integration—Transports ESCON, FICON, 1Gb/2GB Fibre Channel for Storage Area Networking (SAN), Fast and Gigabit Ethernet, and 10 Gb Ethernet for data networking, and SONET/SDH at OC-3/STM1, OC-12/STM4, and OC-48/STM12

Key Features:

- Compact modular design with external connectorization: External Direct Connect system from Line card to OADMs; Optional cross connect and fiber management system

- Transparent Tunable Variable data rate Type 1 Transponders: 16Mbps to 622Mbps MM fiber support; 16Mbps to 2.5Gbp SM fiber support; 16 Tunable transponders support 32 channels for reduced sparing costs; Multi-protocol support for Enterprise

- Tunable Type 2 Transponders with Multi Protocol Small form Factor Pluggables (SFPs): Variable data rate support between 16Mbps to 2.5Gbps; 16 Tunable transponders support 32 channels for reduced sparing costs; Multi-protocol SFP Support—Now featuring Variable Rate SFPs and support for IBM Sysplex/GDPS applications.

- Standards based Management support for SNMP, Ciscoview and Cisco Transport Manager (CTM)

- Protection Switch Module provides highly cost effective solution for fiber trunk protection

- Standards based Optical architecture conforming to ITU G.692 100GHz channel spacing

- This system has been qualified by IBM for Geographically Dispersed Parallel Sysplex (GDPS), and by EMC for Symmetrix Synchronous support as tested in their E-LAB environment

For More Information

See the Cisco ONS 15500 Series Web site: **http://www.cisco.com/go/ons15500**

Cisco ONS 15454 SONET/SDH Multiservice Transport Platform (MSTP)

The Cisco® ONS 15454 Multiservice Transport Platform sets the industry benchmark for metropolitan and regional dense wavelength-division multiplexing solutions by using proven Cisco Multiservice Provisioning Platform networking technologies to deliver simple, fast, and intelligent DWDM capabilities and lower capital and operating expenditures A metropolitan network, being close to or on a customer's premises-unlike its long-haul counterpart-requires support for a great diversity of service interfaces. The service interfaces allow network providers to offer new tariffs and enable enterprise customers to natively transport a wide variety of services over a common transport network without unnecessary conversion stages and equipment. Additionally, a wide service mix simplifies the planning for services. The Cisco ONS 15454 MSTP, with its MSPP capabilities, supports a broad range of standards-based services in a single platform Critical to offering a wide service mix is a DWDM system's ability to offer the level of transparency required by the service. The Cisco ONS 15454 MSTP solution offers the choice of multiservice aggregation, wavelength aggregation, and wavelength transport, combined with integrated, intelligent DWDM transmission, in a single platform to optimize network costs for any mix of service types. Using digital-wrapper technology (defined in ITU-T G.709) enables transparency while still allowing enhanced wavelength management and providing extended optical reach with integrated Forward Error Correction (FEC).

For More Information

See the ONS 15454 MSTP web site:
http://www.cisco.com/en/US/products/hw/optical/ps2006/ps5320/index.html

Cisco ONS 15600 Multiservice Switching Platform

The Cisco ONS 15600 provides unparalleled flexibility in designing next generation metro networks. Fully engineered and optimized for metro networks, the Cisco ONS 15600 MSSP simplifies and revolutionizes bandwidth management in the metro core by allowing service providers to seamlessly integrate their metro core and metro edge networks, while dramatically reducing initial turn up costs. Delivering scalability to 960 Gbps of traffic in a single rack, it complements the market-leading Cisco ONS 15454 Multiservice Provisioning Platform (MSPP) by leveraging its proven architecture and operating software. This allows service providers to dramatically simplify their metro networks and realize immediate cost, space and operational benefits. The Cisco ONS 15600 MSSP provides complete integration of metro core and edge networks for service provisioning and network management.

For More Information

See the ONS 15600 Series web site: **http://www.cisco.com/go/ons15600**

Cisco Transport Manager (CTM 5.0) (Optical Element/Network Management)

Cisco Transport Manager is an integrated optical element management system for Cisco ONS 15000 series optical networking platforms. CTM manages configuration, fault isolation, performance, and security for Cisco optical network elements. With integrated support for SONET, SDH, DWDM and Ethernet, along with open interfaces to operations support systems (OSS), CTM delivers the full power of Cisco's wide range of advanced optical systems to today's network operators and enterprises.

CTM is a powerful tool that increases the productivity of the network operations staff. The system provides GUI-based point-and-click network management. As such, CTM has a low learning curve while providing advanced management capabilities such as A-to-Z circuit provisioning. Explorer-style navigation, the extensive use of wizards, tool tips, legends, and online help make it easy for an operator to perform tasks quickly and efficiently. Many otherwise tedious, time-consuming, and error-prone tasks can be fully streamlined using CTM's features.

CTM works for small networks, but can also scale up to 2500 network elements and 100 concurrent clients per server. This solution is appropriate for small enterprise networks as well as large service provider networks. CTM is extremely cost-effective (uses industry-standard platforms such as Sun Solaris, Oracle8i, and Microsoft Windows). CTM fits smoothly into most companies' information technology environments. Using scalable Sun server platforms, customers can minimize up-front investment, but still accommodate growth by adding additional processors, memory, and disk space.

For More Information

See the CTM Series web site:
http://www.cisco.com/en/US/products/sw/opticsw/ps2204/index.html

IOS® Software and Network Management

Cisco IOS® Software and Network Management at a Glance

Product	Features	Page
Cisco IOS Software	Feature-rich network operating system supported on wide range of Cisco products	9-3
	• Provides a common IP fabric, functionality, and command-line interface (CLI) across network infrastructures	
	• Enables a vast array of key routing, multiservice, traffic shaping, security/firewall, and traffic monitoring applications, and a broad variety of network connections	
CiscoWorks Small Network Management Solution	Web-based network management solution designed for small to medium businesses (SMB)	9-9
	• Device auto-discovery using SNMP simplifies setup and reduces startup time	
	• Standards-based, multi-vendor management	
	• Event management and topology mapping application	
	• Includes Cisco's popular CiscoView Element Management Tool	
CiscoWorks LAN Management Solution	Provides key applications needed to manage Cisco switch-based Enterprise campus networks. This bundle includes:	9-11
	• Campus Manager	
	• Device Fault Manager	
	• Resource Manager Essentials	
	• CiscoView	
CiscoWorks VPN/Security Management Solution	Combines general device management tools for configuring, monitoring, and troubleshooting enterprise networks with powerful security solutions for managing virtual private networks (VPNs), firewalls, and network and host-based intrusion detection systems (IDS). CiscoWorks VMS is organized into several functional areas:	9-12
	• Firewall Management	
	• IDS Management, network and host-based	
	• Host Intrusion Prevention System Management	
	• VPN Router Management	
	• Security Monitoring	
	• VPN Monitoring	
	• Operational Management	
CiscoWorks Security Information Management Solution and CiscoWorks Security Information Management Solution Engine	A solution that collects, analyzes, and correlates security event data from across the enterprise-letting you detect and respond to security events as they occur. The hardware-based solution engine option provides the same features and functions as the CiscoWorks SIMS software on a dedicated appliance. The Solution Engine requires minimal setup and installation.	9-14
	• Event monitoring of multivendor security environments	
	• Extensive reporting for operators and high-level administrators	
	• Risk assessment information to understand overall vulnerability of critical network assets within the enterprise	
	• Forensics tools to investigate attacks	
CiscoWorks Network Connectivity Center	• A suite of network and service management software that manages increasingly complex and distributed networks and IT environments in alignment with business priorities. Leveraging sophisticated modeling, analysis, and automation technologies, itprovides end-to-end insight into how the intelligent network health relates to key business services. It automatically pinpoints service-affecting faults and calculates their business impacts, therefore minimizing service downtime while lowering operating cost and reducing business risk. The suite includes: Cisco NCC Network Connectivity Monitor (NCM); NCM Global Console; Cisco NCC Application Services Manager (ASM); Cisco NCC Application Connectivity Monitor (ACM); Cisco NCC Business Impact Manager (BIM); Cisco NCC ATM/Frame Relay Availability Manager; Cisco NCC MPLS VPN Manager; Cisco NCC Routing Protocol Services Manager (RPSM); Cisco NCC Report Manager; Cisco NCC Adapters; Cisco NCC Business Dashboard	9-15

Product	Features	Page
CiscoWorks Manager IP Telephony Environment Monitor	A suite of telephony management applications that ensures the readiness and manageability of converged networks supporting VoIP and IP telephony traffic and applications. It enables operations and administrative personnel to check the state and operational health of key resources in their converged networks that support IP telephony implementations. The bundle includes: • Voice Health Monitor • Default Fault Manager • CiscoView and Downloadable Modules: • IP Phone Information Utility • IP Phone Help Desk Utility • Gateway Statistics Utility • WAN Performance Utility • Tactical Graphics Utility	9-17
CiscoWorks Voice Manager for Voice Gateways	Enables the management and monitoring of devices used as gateways between analog voice equipment and the data network. • Enhanced capabilities to configure and provision voice ports • Create and modify dial plans on voice-enabled Cisco routers for voice over IP (VoIP), voice over Frame Relay (VoFR), and voice over ATM (VoATM) network deployments	9-19
CiscoWorks QoS Policy Manager (QPM)	Enables centralized administration and automated deployment of bandwidth reservation and prioritization policies for network applications across converged voice, video and data networks. • Differentiates services of Web applications, voice traffic, and business-critical applications • Validate QoS settings and results with traffic analysis • Real time and historical reports for QoS troubleshooting • Control roles and privileges for policy view, modification and deployment	9-20
CiscoWorks Wireless LAN Solution Engine	A hardware based wireless LAN management solution that provides template-based configuration with user-defined groups to effectively manage a large number of access points and bridges • Monitors LEAP authentication servers • Enhances security management through mis-configuration detection on access points and bridges	9-22
CiscoWorks Hosting Solution Engine	A hardware-based content management solution for e-business operations in Cisco-powered data Centers. This product provides network infrastructure monitoring and Layer 4-7 hosted services configuration and activation. • Flexible security model offers tiered user access to server management	9-23
Cisco Catalyst 6500 Series Network Analysis Modules 1 and 2	NAM is an integrated, network monitoring instrumentation and Web-browser based traffic analysis solution for the Catalyst 6500 based environments. It enables greater visibility into traffic at all layers of the network by providing real time traffic analysis and troubleshooting capabilities.	9-24
Cisco Network Analysis Module for Branch Routers - Cisco 2600/3660/3700 Series Network Analysis Module	The Cisco 2600/3660/3700 Series NAM is an integrated traffic-monitoring network module that enables network managers to gain application-level visibility into network traffic with the ultimate goal of improving performance, reducing failures, and maximizing return on network investments.	1-1
Cisco Secure User Registration Tool (URT)	Provides organizations with increased LAN security by actively identifies users within the network and creates user registration policy bindings that help support mobility and tracking: • Ensures that users are associated with their authorized subnet/VLAN • Addresses the challenges associated with campus user mobility • Supports Web-based authentication for Windows, Macintosh, and Linux client platforms • Secure user access to the VLAN with MAC address-based security option to allow multiple users connected to a hub access to a VLAN served by single switch port	5-13
Cisco Secure Access Control Server (ACS) for Windows and Cisco Secure Access Control Server Solution Engine	Cisco® Secure Access Control Server (ACS) is a highly scalable, high-performance access control server that provides a comprehensive identity networking solution and secure user experience for Cisco intelligent information networks. An important component of the Cisco Identity-Based Networking Services (IBNS) architecture. It supports several access connection types, including wired and wireless LANs, dialup, broadband, content, storage, voice over IP (VoIP), firewalls, and VPNs. It helps ensure enforcement of assigned policies by allowing network administrators to control: • Who can log in to the network • Privileges each user has in the network • Security audit or account billing information that is recorded	5-10
Cisco IOS Tools	List of essential IOS web-based tools available on Cisco.com	9-9

Cisco IOS® Software

The family of Cisco IOS Software products (T, S and XR) enables Cisco to meet the network infrastructure requirements of Large and Small Enterprises, as well as Service Providers, because each software product is architected to meet the needs of a given customer type. Customers benefit from shared intellectual property and technologies between family members and all Cisco IOS products deliver the consistent look and feel.

Key Features

- Availability—Automatically recover from errors; adapt to network infrastructure changes
- Security—Protects network devices allowing them to remain operative, and thereby controllable, even during an attack
- Manageability—Instrumentation required to manage devices, technologies and network
- Flexibility—Adapts to evolving requirements
- Scalability—Allows networks to expand in size and capability

Security

Cisco IOS network security is integrated into Cisco switches, routers, and wireless access devices to protect the network and secure information. It delivers a sophisticated set of security capabilities such as Encrypted IPSEC VPNs , Firewall , Intrusion Detection Systems , Trust & Identity, 802.1x Wireless LAN Security, some of which may be hardware-assisted. Cisco IOS security technologies work with Cisco security appliances to provide the right type of security, where customers need it most.

High Availability

Cisco offers a comprehensive solution to High Availability Networking (HAN) that minimizes network outages and ensures non-stop access to the most business critical applications. Cisco HAN takes a network-wide approach, delivering the most cohesive and collaborative solution to maintain high network availability. Cisco's software using various technologies targets potential causes of downtime allowing customers to build networks with a high Mean Time Between Failure and a low Mean Time To Recovery

Management Instrumentation

Cisco IOS Software provides a rich set of embedded features that enable customers to efficiently measure and manage network and application bandwidth to set and meet performance expectations. Whether using Cisco IOS SNMP MIBs with centralized network management software, purposed appliances, or making changes to configurations with Cisco IOS CLI, the management instrumentation benefits operators in all areas of the network. It rapidly incorporates new network services and devices; Reduces downtime with adaptive fault management; and, enables SPs to manage the performance of differentiated services, while Enterprises can verify the SLAs they purchase.

Routing

Cisco IOS Software offers the industry's widest variety of enterprise and service provider-class routing protocols. Protocols that provide for integration, and are integrated with each other, enable the convergence of data, voice and video networking. Routing Technology's adaptive behavior enables customer networks to evolve with user needs. It is critical to scalability and allows networks to expand in size and capability, while preserving hardware and network investments. The technology includes Optimized Edge Routing (OER), On Demand Routing (ODR), Routing Information Protocol (RIP), Interior Gateway Routing Protocol (IGRP), Open Shortest Path First (OSPF), IP Multicast, Integrated IS-IS, Enhanced Interior Gateway Routing Protocol (EIGRP), and Border Gateway Protocol (BGP).

Multicast

Multicast is a bandwidth-conserving technology that reduces traffic by simultaneously delivering a single stream of information to thousands of corporate recipients and homes. Applications that take advantage of multicast technologies include video conferencing, corporate communications, distance learning, and distribution of software, stock quotes, and news.

Key Features

- Efficiently deploys and scales distributed group applications across the Internet
- Creates a ubiquitous, enterprise-wide content distribution model
- Solves traffic congestion problems
- Allows service providers to deploy value-added streaming services that leverage their existing infrastructure.

Multiprotocol Label Switching (MPLS)

Cisco pioneered Multi protocol Label Switching (MPLS) and has made it available in Cisco IOS Software for significant advantages in applications like virtual private networks (VPNs) and traffic engineering. It enables service providers to offer many new services to customers at lower costs, replaced some Frame Relay, leased line and Asynchronous Transfer Mode (ATM) services that were not cost-effective, and converged services onto one network. It fuses intelligent routing capabilities with the performance of switching. It provides significant benefits to networks with pure IP architectures and those with IP and ATM or a mix of other Layer 2 technologies.

MPLS technology is key to implementing scalable Virtual Private Networks (VPNs) and end-to-end QoS, enabling efficient utilization of existing networks to meet growth needs and to rapidly correct link fault and node failure. This technology also helps deliver highly scalable, differentiated IP services with simpler configuration, management, and provisioning for both Internet service providers and end-user customers.

For More Information

See the Cisco IOS MPLS Web site: **http://www.cisco.com/go/mpls**

Quality of Service (QoS)

QoS is the set of techniques to manage network resources. Achieving the required QoS by managing delay, delay variation (jitter), bandwidth, and packet loss parameters on a network becomes the secret to a successful end-to-end business solution. QoS is the set of techniques to manage network resources. IOS does this through following features:

- Differentiated Services—Performs Packet classification based on IP precedence and QoS group setting and Bandwidth management through various rate limiting features
- Integrated Services—IOS does through RSVP typically perform admission control, Classification, policing, and scheduling of data packets on a per-flow basis and keeps a database of information for each flow
- Network-Based Application Recognition—IOS does this in two steps Intelligent classification engine used with class-based features and Protocol Discovery and analysis

IPv6

IPv6—Internet Protocol version 6—is the next generation of the protocol that runs the Internet. IPv6 is currently a set of draft standards in the Internet Engineering Task Force (IETF). IPv6 is designed to improve upon IPv4's scalability, ease-of-configuration, and re-introduce the original TCP/IP benefits for global networking. Fundamentally, IPv6 expands network addressing from the current 32-bit address length to 128-bit, accommodating future growth in IP devices and users. The 128 bits provide approximately 3.4 x 1038 addressable nodes, enough to allocate over a million addresses per person on the planet.

For More Information

See the Cisco IOS IPv6 Web site: **http://www.cisco.com/go/ipv6**

IOS Packaging and Licensing

Cisco IOS Software code is continuously refreshed and maintained to adapt to the changing needs of customers, and the evolution of markets. Software refresh occurs to ensure new features work with existing ones, make existing features work better together, improve platform performance, and optimize for device memory. As of Cisco IOS 12.3, customer needs are better suited with updated framework for feature sets, reduced in number from forty-four to eight, Refined and simplified as of 12.3, subsequent releases will improve the release selection experience due to fewer feature sets, and the consistency of feature set naming and feature inheritance.

The new features set framework is available on Cisco 1700, 2600XM, 2691, and 3700 Series Routers as of Cisco IOS Software 12.3.

The Principle of Feature Inheritance

Cisco IOS Packaging inherits all of the Cisco IOS Software features and services available in the packages below it, offering customers a clear migration and upgrade path.

Feature Set Naming Conventions

The new package names emphasize the inheritance characteristics of Cisco IOS Packaging. They also provide a high-level feature content description of the new packages, which further simplifies the image selection process. The new packages are introduced as upgrade and migration opportunities in Cisco IOS Software Release 12.3[1].

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1. Cisco 1720, Cisco 2600 non-XM, and the Cisco 3600 Router Series do not support Cisco IOS Packaging in Release 12.3

New Naming Convention Categories

Category	Naming Convention
Base	Entry level image, (i.e., IP Base)
Services	Addition of IP Telephony Service, MPLS, Net Flow, Voice over IP (VoIP), Voice over Frame Relay (VoFR), and ATM (i.e., SP Services, Enterprise Services)
Advanced	Addition of VPN, Cisco IOS Firewall, 3DES encryption, SSH, Cisco IOS IPSEC and Intrusion Detection Systems (IDS) (i.e., Advanced Security, Advanced IP Services)
Enterprise	Additional of multi-protocols, including IBM, IPX, AppleTalk (i.e., Enterprise Base, Enterprise Services)

Cisco IOS Packaging Platform Support

Platforms that migrate to the new packaging framework with target packages

	IP Base	IP Voice	Advanced Security	Advanced IP Services	SP Services	Enterprise Base	Enterprise Services	Advanced Enterprise Services
Cisco 3745	X	X	X	X	X	X	X	X
Cisco 3725	X	X	X	X	X	X	X	X
Cisco 2691	X	X	X	X	X	X	X	X
Cisco 2600 XM Series	X	X	X	X	X	X	X	X
Cisco 1751-V, 1760	X	X	X	X	X	X	X	X
Cisco 1721, 1751	X		X			X		

Cisco IOS Trains

A Cisco IOS train is a vehicle for delivering releases that evolve from a common code base. In recent years, with the addition of thousands of new features, hundreds of new applications, and a wide array of platforms, Cisco IOS Software diversified from one train of releases to multiple trains supporting different feature sets for different customer needs.

Types of Trains

Cisco IOS releases are delivered on the following types of trains

Train	Description	Examples
mainline	Consolidates releases and fixes defects. Inherits features from the parent T train, and does not add additional features.	12.2, 12.3
T	Introduces new features and fixes defects.	12.3T
S	Consolidates 12.1E, 12.2 mainline, and 12.0S, which supports high-end backbone routing, and fixes defects.	12.0S, 12.2S
E	Targets enterprise core and SP edge, supports advanced QoS, voice, security, and firewall, and fixes defects.	12.1E
B	Supports broadband features and fixes defects.	12.2B, 12.3B

Bug Synchronizing and Feature Integration

Bug fixes to maintenance releases on a mainline train are synchronized with subsequent maintenance releases on the child T train. New features are integrated into the T train only-the mainline train receives bug fixes only.

Train Lifecycle Milestones

At some point in the life of a train, Cisco stops selling, maintaining, and supporting it. Cisco informs customers that a train has reached one of these milestones by issuing product bulletins and other communications. First Customer Shipment (FCS), End of Sale (EoS), End of Engineering (EoE), and End of Life (EoL) are associated with lifecycle milestones.

Milestones in the Life of a Train

The following table briefly describes the train lifecycle milestones

Milestone	Available through Sales Channels	Bug Fixes	TAC Support	Download from Cisco.com
FCS	Yes	Yes[1]	Yes	Yes
EoS	No	Yes	Yes	Yes
EoE	No	No	Yes	Yes
EoL	No	No	No	No

1. FCS corresponds to the first maintenance release on the train. Each new release receives regular maintenance during the early part of the life cycle.

Cisco IOS Releases

A release is a snapshot in time of the code base of a train. Types of Releases include Maintenance releases, Rebuild releases, General Deployment (GD) releases, and Special releases.

Release	Description
Maintenance Releases	A maintenance release is a scheduled revision of Cisco IOS Software that introduces new features or bug fixes, or both. Maintenance releases typically occur every eight to thirteen weeks, depending on the train.
Rebuild Releases	Circumstances and business demands may require that a number of images from a Cisco IOS train be rebuilt and posted prior to the next planned maintenance release. Rebuilds are a Cisco IOS vehicle that delivers fixes on an accelerated schedule.
General Deployment (GD) Releases	A Cisco IOS Software release reaches GD certification when its quality has been demonstrated by extensive deployment in diverse networks over extended periods of time; Cisco IOS releases achieve GD status after meeting strict standards

General Deployment (GD) Release Criteria	A GD release must meet the following criteria:
	• Improving Trend in Defect Backlog
	  – Customer Advocacy (CA) evaluation of known defects
	  – No new features or platforms, defect resolution commits only
	  – No open Critical Account Program (CAP) issues
	  – Defect density measurements
	  – Software Reliability Engineering (SRE) projected defects
	  – Minimal code changes No serious defects in previous maintenance releases
	• Customer Success
	  – Extensive customer exposure
	  – High level of customer satisfaction
	• Cisco Deployment
	  – Comprehensive system test and deployment in Cisco's internal network
	• Documentation
	  – Release Notes Enclosures (RNEs) complete

General Deployment (GD) Lifecycle	After a release attains GD status, every subsequent revision of the release is also GD. Consequently, when a release is declared GD, it enters a restricted maintenance phase. While in this phase, modification of the code, including bug fixes, is strictly limited and controlled by a program manager to prevent bugs from being introduced into the release.
Special Releases	A special release is a branch from a train code base that is introduced to quickly meet market demands for new features or additional platform support. The early field adoption of new features and platforms that Cisco introduces in special releases benefits customers who need to run new network equipment or services. The following table lists technology identifiers used in the names of special releases.

Special Release Technology Identifiers

Identifier	Target Technology or Platform
X	Varies, one time release
Y	
Z	
A	Aggregation/Access Server/Dial
D	xDSL
H	SDH/SONET
J	Aironet Wireless Networking
M	Mobile Wireless
W	ATM/LAN Switching/Layer 3 Switching

Lifecycle of Special Releases

Cisco's end of life (EoL) policy is not applicable to special releases

Interim Builds

An interim build is software from an internal Cisco engineering build process that the Cisco Technical Assistance Center (TAC) gives customers to use on a temporary basis to address a specific issue. Customers who have an interim build installed on their network should contact TAC for assistance in replacing the interim build.

Important Communications about Releases

Cisco issues many software advisories to customers for informational purposes only. Often, software advisories describe problems with Cisco IOS Software that are platform specific or occur under unusual circumstances, and therefore, do not affect most customers. Often, no action is required by the customer.

Critical Release Communication Types

Security Advisory	Product Security Incident Response Team (PSIRT) issues a security advisory to alert customers to security issues that directly impact Cisco products and to help customers repair the Cisco product.
Security Notices	Cisco issues Security Notices about issues that require a response to information posted to a public forum, or to make recommendations to mitigate general problems affecting network stability.
Deferral Advisory	Cisco issues a deferral advisory to announce the removal of a Cisco IOS image from Cisco's offerings and to introduce a replacement image. A deferral advisory is most often issued to correct a defect. At the time that the deferral of a Cisco IOS image is advised, customers are strongly urged to migrate from the affected image to the replacement image.

Cisco IOS Software Licenses

A Cisco IOS Software License includes the right to use a particular software release and feature set on one router. In some cases, additional value-added functionality is provided in software images but not covered by the "base" Cisco IOS Software License. The right to use these features is offered through a feature license.

A feature license conveys the right to use a feature, but cannot add a feature to a software release that does not support it. For example, purchasing a WAN Packet Protocols/Net flow license for software Release 11.0 will not upgrade the software to support Net flow. Choose a software release that supports all required features, then choose any necessary feature licenses.

Cisco IOS Software Upgrade Licenses

Customers who purchase "base" software licenses may wish to increase their software functionality or feature set at some point. The following illustrates the benefits of software feature licenses as well as how they are used to provide increased software functionality.

Example	Description
Upgrade A Feature Set (Single)	If a customer purchased a Router with Enterprise software, earlier and now wants to upgrade to Enterprise with Firewall/IDS, the customer has one of two options
	• With a valid maintenance contract, the customer may purchase the software feature license, Firewall/IDS Upgrade, to upgrade from Enterprise to Enterprise with Firewall/IDS.
	• Without maintenance, the customer will need to purchase a new software license Enterprise/FW/IDS, in order to upgrade from Enterprise to Enterprise with Firewall/IDS.
Upgrade Feature Sets (Multiple)	If a customer purchased a router with IP software, product code and now wants to upgrade to Enterprise with IPSEC 56, the customer has one of two options
	• With a valid maintenance contract, the customer will need to purchase two software feature license: IP to Enterprise and IPSEC 56 Upgrade. The first license upgrades from IP to Enterprise, and the second upgrades from Enterprise to Enterprise/IPSEC 56.
	• Without maintenance, the customer will need to purchase a new software license, Enterprise/IPSEC 56, in order to upgrade from IP to Enterprise with IPSEC 56.

Key Cisco IOS Tools

Tool	Description
Software Selector	Finds required features for a given technology.
	http://tools.cisco.com/ITDIT/ISTMAIN/servlet/index
Feature Navigator	Finds releases that support a set of software features and platforms, and compares releases.
	http://tools.cisco.com/ITDIT/CFN/jsp/index.jsp
Software Advisor	Compares IOS releases, matches IOS and CatOS features to releases, and finds out which software release supports a given hardware device.
	http://www.cisco.com/cgi-bin/front.x/Support/HWSWmatrix/hwswmatrix.cgi
Cisco IOS Upgrade Planner	Finds releases by platform, release, and feature set, and downloads images of Cisco IOS Software.
	http://www.cisco.com/cgi-bin/Software/Iosplanner/Planner-tool/iosplanner.cgi?
Bug Toolkit	Searches for known bugs based on software version, feature set, and keywords.
	http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl

For More Information on Cisco IOS Software

See the Cisco IOS Software Web site: **http://www.cisco.com/go/ios**

See the Cisco IOS Reference Web Site: **http://www.cisco.com/warp/customer/620/1.html**

Cisco Network Management Overview

Cisco is transforming traditional network management by focusing on the strengths of Internet-based architectures for greater accessibility and simplification of network management tools, tasks, and processes. Cisco's network management strategy calls for a Web-based model with the following characteristics:

- Simplification of tools, tasks, and processes
- Web-level integration with NMS platforms and general management products
- Capable of providing end-to-end solutions for managing routers, switches, and access servers
- Creation of a management intranet by integrating discovered device knowledge with CCO and third-party application knowledge

CiscoWorks Small Network Management Solution

CiscoWorks Small Network Management Solution (SNMS) is an end-to-end network management solution ideal for small networks which might include two or three branch offices. CiscoWorks SNMS is a comprehensive, cost-effective, and user-friendly solution that provides advanced monitoring, and configuration capabilities. It also provides management capabilities that simplify network administration. CiscoWorks SNMS enables network operators to more efficiently and effectively manage the network through a simplified browser-based interface that can be accessed anytime from anywhere within the network. CiscoWorks SNMS provides tools that make the job of configuring, monitoring, and troubleshooting routers, switches, firewalls, and other business applications, quicker and helps reduce the likelihood of human errors. Businesses that use CiscoWorks SNMS can enjoy the twin advantages of decreasing downtime and the ability to easily roll out changes in the network.

Positioned between CiscoWorks for Windows (CWW) and the CiscoWorks LAN Management Solution (LMS), SNMS introduces network administrators to the functionality of Resource Manager Essentials along with the multi-vendor device monitoring and SNMP management features of WhatsUp Gold. SNMS provides a cost effective solution that can be easily installed and used today while providing a transition path to CiscoWorks LAN Management Solution.

When to Sell

Sell This Product	When a Customer Needs These Features
CiscoWorks Small Network Management Solution	• Simple integrated installation, autodiscovery and automated import of devices using SNMP • Standards-based multi vendor management • Reduce the time and complexity of keeping the networks' configuration, software version and connectivity optimized

Key Features

- Aids in avoiding configuration mismatches via templates for Simple Network Management Protocol (SNMP) community, Terminal Access Controller Access Control System (TACACS), enable, syslog, SNMP trap destinations, Cisco Discovery Protocol (CDP) and Domain Name System (DNS) to prevent CLI command errors
- Provides a snapshot of the current state of a specific device with detailed graphical back and front views
- Provides a single window to monitor and manage Cisco network devices and non-network devices such as PCs, servers, and applications
- Monitors and reports on hardware, configuration, and inventory changes
- Provides reports that analyze prerequisites and impacts of proposed software updates
- Simplifies remote access to SNMS applications through a secure web browser while providing tiered user access based upon role permission

CiscoWorks Small Network Management Solution Components

CiscoWorks Small Network Management Solution includes the following tools:

- CiscoView—Provides graphical back and front panel views of Cisco devices; dynamic, color-coded graphical displays to simplify device-status monitoring, device-specific component diagnostics, device configuration, and application launching
- CiscoWorks Server—Provides the common management desktop services and security across the CiscoWorks family of solutions. It also provides the foundation for integrating with other Cisco and third-party applications
- Support for secure browser communications with CiscoView and RME sessions via Secure Socket Layer (SSL) and Secure Shell (SSH) protocol
- WhatsUp Gold from Ipswitch, Inc.—Provides network discovery, mapping, monitoring, and alarm tracking
- Resource Manager Essentials—Resource Manager Essentials (RME) provides tools for building and managing network inventory, deploying configuration and software image changes, archiving configurations, and providing an audit trail of network changes

Important: RME has a device limit of 40 or fewer Cisco devices.

Specifications

Feature	CiscoWorks Small Network Management Solution
Server	Hardware: PC-compatible computer with 1 GHz or faster Pentium processor; CD-ROM drive; 100Base-T or faster connection; 512 MB RAM; 9 GB available disk drive space; 1 GB virtual memory
	Software: Windows 2000 Professional, Server, and Advanced Server (Service Pack 3)
Client	Hardware: PC-compatible computer with 1 GHz or faster Pentium processor
	Operating System: Windows 2000 Server or Professional Edition with Service Pack 3, or Windows XP SP1 with Microsoft VM
	Browser: Internet Explorer 6.0 Service Pack 1, on Windows operating systems

Selected Part Numbers and Ordering Information

CiscoWorks Small Network Management Solution

CWSNM-1.5-K9	CiscoWorks Small Network Management Solution 1.5 for Windows; includes WhatsUp Gold 8.0, Common Services 2.2 with CiscoView 6.0, Resource Manager Essentials 3.5 (40 Cisco device restriction)
CWSNM-1.5-WINMR-K9	Maintenance kit for customers that purchased SNMS 1.0 X and now want new device support and code upgrades; kit includes support for Windows and updates to all components - September 2003

For More Information

See the CiscoWorks Small Network Management Solution Web Site:
http://www.cisco.com/go/wrsnms

CiscoWorks LAN Management Solution

The CiscoWorks LAN Management Solution consists of operationally focused tools. These tools include fault management, scalable topology views, sophisticated configuration, Layer 2/3 path analysis, voice-supported path trace, traffic monitoring, end-station tracking, workflow application server management, and device troubleshooting capabilities. CiscoWorks LMS combines applications and tools for configuring, monitoring, and troubleshooting the campus network.

When to Sell

Sell This Product	When a Customer Needs These Features
LAN Management Solution	• A set of tools for managing Cisco's award winning Catalyst switches
	• Time saving user tracking and path trace analysis tools with support of IP phones
	• Automated process of inventorying network devices, updating device software, and managing configuration to reduce the time and errors involved in network updates
	• Browser-accessible, graphical tool for configuring and monitoring Cisco device components and operational status
	• VLAN, ATM, or LANE service management tools
	• Active fault monitoring of Cisco devices

Key Features

- Campus Manager—Web-based applications designed for managing Layer 2 device and connectivity discovery, workflow application server discovery and management, detailed topology views, virtual LAN/LAN Emulation (VLAN/LANE) and ATM configuration, end-station tracking, Layer2/3 path analysis tools, and IP phone user and path information

- Device Fault Manager—Provides real-time fault analysis for Cisco devices, automatically includes Cisco devices into its monitoring environment and applies a Cisco "Best Practices" fault rule to each device

- Resource Manager Essentials—Provides the tools needed to manage Cisco devices. It includes inventory and device change management, network configuration and software image management, network availability, and syslog analysis

- CiscoView—Provides back- and front-panel displays; dynamic, color-coded graphical displays simplify device-status monitoring, device-specific component diagnostics, and application launching

- CiscoWorks Server—Provides the common management desktop services and security across the CiscoWorks Family of solutions. It also provides the foundation for integrating with other Cisco and third-party applications

- Support for secure browser communications with CiscoView and RME sessions via Secure Socket Layer (SSL) and Secure Shell (SSH) protocol

Specifications

Feature	Description
Server	Hardware: Sun UltraSPARCIII (Sun Blade 1000 Workstation or Sun Fire 280R Workgroup Server) or IBM PC compatible with 550-MHz or higher Pentium III processor running; (Dual processor system required for hosting multiple management solutions)
	Software: Solaris 2.8; Microsoft Windows 2000 Advanced Server (with Terminal Services turned off), Server or Professional Edition with Service Pack 3
Client	Hardware: IBM PC-compatible computer with 300-MHz or higher Pentium processor; Sun Ultra 10, HP9000 Series; IBM RS/6000 running
	Software: Windows XP Professional with Service Pack 1, Windows 2000 Professional with Service Pack 2 or 3, Windows Server with Server Pack 2 or 3; Solaris 2.7, 2.8; HP-UX 11.0; AIX 4.3.3
	Web Browser support for Windows 2000/XP: Netscape 4.78 or 4.79 or Internet Explorer 6.0 with Service Pack 1; Solaris support for Netscape 4.76 only
Supported Cisco Devices	Most Cisco IOS Software routers, access servers, hubs, and switches
Supported Cisco IOS Software Versions[1]	Generally supports: Cisco IOS Software Versions 10.3 and higher; Catalyst Supervisor code 2.1 through 4.1

1. Some CiscoWorks applications require certain versions of IOS and CAT these releases in order to operate, please see the specific application documentation and release notes for more information

Selected Part Numbers and Ordering Information[1]

LAN Management Solution

CWLMS-2.2-K9	LAN Management Solution 2.2 for Windows and Solaris; includes Campus Manager 3.3, Device Fault Manager 1.2, Resource Manager Essentials 3.5, Common Services 2.2 with CiscoView 5.5
CWLMS-2.2-P1-K9	Cross Bundle Discount LMS 2.2 for Windows and Solaris platforms; available to customers who have previously purchased RWAN 1.X and want to add LMS

LAN Management Solution Upgrades

CWLMS-2.2-UP-K9	Upgrade kit for LMS 1.X customers wanting to upgrade to LMS 2.2; kit includes support for both Windows and Solaris platforms; primary value of this kit is to provide DFM to LMS 1.X customers
CWLMS-MAY03-MR-K9	Maintenance kit for customers that purchased LMS 2.X and want new device support and code updates; kit includes support for both Windows and Solaris platforms; includes updates to all LMS 2.X components. Customers with LMS 1.X will not be able to install DFM 1.2 (use PN# CWLMS-2.2-UP-K9 to purchase the LMS 2.2 upgrade with DFM)

1. This is only a small subset of all parts available via URL listed under "For More Information". Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the *Distribution Product Reference Guide* at: http://www.cisco.com/dprg (limited country availability).

For More Information

See the LAN Management Solution Web site: **http://www.cisco.com/go/lms**

CiscoWorks VPN/Security Management Solution

CiscoWorks VPN/Security Management Solution (VMS), an integral part of the SAFE Blueprint for network security, combines Web-based tools for configuring, monitoring, and troubleshooting enterprise virtual private networks (VPNs), firewalls, and network and host-based intrusion detection systems (IDS). It offers the ability to monitor remote access links, and IPSec based site to site VPN links. VMS is a Web-based solution that provides a "dashboard" view of critical VPN resources and their performance, VPN hardware and configuration and troubleshooting reports.

When to Sell

Sell This Product	When a Customer Needs These Features
CiscoWorks VPN/Security Management Solution	• Complete management of a SAFE infrastructure environment
	• Configuring and monitoring VPN, PIX, IOS routers, and IDS devices.
	• Monitoring large remote access, and site-to-site hub and spoke VPNs from a single management console and focus on problem areas and performance.

Key Features

- Management and Monitoring Centers—Supplies the latest in management functionality and multifaceted scalability by offering features such as a consistent user experience, auto update, command and control workflow, and role-based access control. The management and monitoring centers include Management Center for Firewalls, Management Center for IDS Sensors, Management Center for Cisco Security Agents, Management Center for VPN Routers, and Monitoring Center for Security

- VPN Monitor—Allows network administrators to collect, store, and view information on IPSec VPN connections for remote-access or site-to-site VPN terminations. Multiple devices can be viewed from an easy-to-use dashboard that is configured using a Web browser

- Cisco IDS Host Sensor Console—Provides real-time analysis and reaction to network hacking attempts by identifying an attack and preventing access to critical server resources before any unauthorized transactions occur

- Resource Manager Essentials (RME)—Provides the tools needed to manage Cisco devices. It includes inventory and device change management, network configuration and software image management, network availability, and syslog analysis

- CiscoWorks Server—Provides the common management desktop services and security across the CiscoWorks family of solutions. It also provides the foundation for integrating with other Cisco and third-party applications

- Support for secure browser communications with CiscoView and RME sessions via Secure Socket Layer (SSL) and Secure Shell (SSH) protocol

Specifications

Feature	CiscoWorks VPN/Security Management Solution
Server	Hardware: IBM PC-compatible computer with 1-GHz or faster Pentium processor; Sun UltraSPARC 60 MP with 440-MHz or faster processor; Sun UltraSPARCIII (Sun Blade 1000 Workstation or Sun Fire 280R Workgroup Server)
	Software: Windows 2000 Professional, Server, and Advanced Server (Service Pack 3); Sun Solaris 2.8
Server	Hardware: IBM PC-compatible computer with 300-MHz or faster Pentium; Solaris SPARCstation or Sun Ultra 10
	Software: Windows 2000 Server or Professional Edition with Service Pack 3, or Windows XP SP1 with Microsoft VM; Solaris 2.8
	Browser: Internet Explorer 6.0 Service Pack 1, on Windows operating systems; Netscape Navigator 4.79, on Windows 2000 Server or Professional Edition with Service Pack 3, or Windows XP; Netscape Navigator 4.76 on Solaris 2.8

Selected Part Numbers and Ordering Information

CiscoWorks VPN/Security Management Solution

CWVMS-2.2-UR-K9	CiscoWorks VMS 2.2 Windows (unrestricted device usage; 1 server installation license); Includes: Management Center for Firewalls 1.1, for IDS Sensors 1.2, for Cisco Security Agents 4.0, and for VPN Routers 1.1, CiscoWorks Auto Update Server 1.1, CiscoWorks Monitoring Center for Security 1.2, CiscoWorks VPN Monitor 1.2, RME 3.5, and Common Services 2.2[1]
CWVMS-2.2-WINR-K9	CiscoWorks VMS 2.2 Windows (20-device restricted usage; 1 server installation license); Includes: Management Center for Firewalls 1.1, for IDS Sensors 1.2, for Cisco Security Agents 4.0, and for VPN Routers 1.1, CiscoWorks Auto Update Server 1.1, CiscoWorks Monitoring Center for Security 1.2, CiscoWorks VPN Monitor 1.2, RME 3.5, and Common Services 2.2
CWVMS-2.2-WUPGR-K9	Upgrade from CSPM 2.x (unrestricted license), CiscoWorks VMS 1.X or 2.X (restricted licenses) to CiscoWorks VMS 2.2 for Windows and Solaris (unrestricted license)[1]
CWVMS-2.2-UPGUR-K9	Upgrade from CSPM 2.X (restricted license) or CiscoWorks VMS 1.X (restricted license) to CiscoWorks VMS 2.2 for (20-device restricted license)[1]
CWVMS-DEC03URMR-K9	Minor update kit for existing VMS 2.X Windows and Solaris (unrestricted license)[1]
CWVMS-DEC03RMR-K9	Minor update kit for existing VMS 2.X Windows Only (20-device restricted license)[1]

1. Contains Windows-only versions of Management Center for Firewalls 1.1, for IDS Sensors 1.2, for Cisco Security Agents 4.0 and for VPN Routers 1.1, CiscoWorks Auto Update Server 1.1, and CiscoWorks Monitoring Center for Security 1.2

For More Information

See the CiscoWorks VPN/Security Management Solution Web site:
http://www.cisco.com/go/vms

CiscoWorks Security Information Management Solution and CiscoWorks Security Information Management Solution Engine

The CiscoWorks Security Information Management Solution (SIMS) is a solution for effectively gathering and analyzing the overwhelming amount of security event data that companies receive through growing numbers of multi-vendor security devices and systems installed throughout their network. SIMS is based on technology from netForensics and incorporates powerful features to help companies better manage their growing security infrastructure and effectively monitor millions of event messages, without additional staff.

CiscoWorks SIMS 3.1 also introduces a new, hardware-based solution engine option that provides the same features and functions as the CiscoWorks SIMS 3.1 software on a dedicated appliance. The CiscoWorks SIMS 3.1 Solution Engine requires minimal setup and installation.

The hardware based solution engine provides regional scalability for customers with small to medium deployments and the software only solution provides global scalability for larger deployments.

When to Sell

Sell This Product	When a Customer Needs These Features
CiscoWorks Security Information Management Solution	• Security monitor with advanced visualization for quickly detecting known and unknown threats • Perform risk assessments and analysis to determine overall vulnerability of enterprise network assets • Manage and correlate events from SAFE and multi-vendor security environments

Key Features

- Complete event monitoring for SAFE and all multivendor security environments
- Advanced visualization for fast and intuitive security monitoring
- Integrated risk assessment to understand the overall vulnerability of any particular asset within the enterprise
- Comprehensive reporting and forensics for all levels of security operations
- Productivity gains and cost reduction
- Flexible deployment options of either software only or network appliance with SIMS pre-installed on a Cisco 1160 Solutions Engine

Specifications

Feature[1]	CiscoWorks Security Information Management Solution (Open Server)
Server	Hardware: Linux: Dual Intel Pentium IV with 1.5 GHz (Server Class) with 4 GB RAM and 18 GB available disk space for full install; Solaris: Dual UltraSPARC-Iii with 444 MHz (Server Class) with 4 GB RAM and 18 GB available disk space for full install
	Software: Linux: Red Hat Linux, Solaris: 2.8
Client	Hardware: IBM PC-compatible computer with 300-MHz or faster Pentium; Solaris SPARCstation or Sun Ultra 10
	Software: Windows 2000 Server or Professional Edition with Service Pack 3, or Windows XP SP1 with Microsoft VM; Solaris 2.8
	Browser: Internet Explorer 6.0 Service Pack 1, on Windows operating systems; Netscape Navigator 4.79, on Windows 2000 Server or Professional Edition with Service Pack 3, or Windows XP; Netscape Navigator 4.76 on Solaris 2.8

1. For complete Server and Client Hardware and Software requirements, please refer to the Product Literature or Installation documentation for specific details and requirements; Information on the CiscoWorks Security Information Management Solution Engine can be found in the Product Literature

Selected Part Numbers and Ordering Information[1]

CiscoWorks Security Information Management Solution (Open Server)

CWSIME-1160-K9	Security Information Management Solution Engine 3.1; includes the Cisco 1160 hardware platform and Security Information Management Solution software version 3.1
CWSIM-3.1-SS-K9	Security Information Management Solution 3.1 Starter Kit for Solaris; restricted license for monitoring 30 devices; License covers installation of 1 master engine, 1 distributed engine server and 1 database server. Includes release CDs for all software and documentation. Web enabled license activation required upon receipt
CWSIM-3.1-SL-K9	Security Information Management Solution 3.1 Starter Kit for Linux; restricted license for monitoring 30 devices; License covers installation of 1 master engine, 1 distributed engine server and 1 database server. Includes release CDs for all software and documentation. Web enabled license activation required upon receipt
CWSIM-3.1-DS-K9	Additional database server license for existing SIM 3.1 installations running Solaris. Web enabled license activation required upon receipt
CWSIM-3.1-DL-K9	Additional database server license for existing SIM 3.1 installations running Linux. Web enabled license activation required upon receipt
CWSIM-3.1-EN-K9	Distributed Engine add-on license for SIM 3.1 installations running Solaris or Linux. Web enabled license activation required upon receipt

1. This is only a small subset of all parts available via URL listed under "For More Information". Some parts have restricted access or are not available through distribution channels.

For More Information

See the CiscoWorks Security Information Management Solution Web site:
http://www.cisco.com/go/sims

CiscoWorks Network Connectivity Center Products

The Cisco® Network Connectivity Center (NCC) delivers end-to-end management across multiple tools, technologies, and silos. From networks and applications to business impact and dashboard views, Cisco NCC manages the entire IT environment in alignment with an organization's business objectives.

Organizations continue to measure IT investments against how they contribute to business objectives. Primary organizational goals include improving service levels and reducing operating costs by optimizing the performance of the infrastructure and the applications that deliver critical business services.

Cisco NCC is a suite of network and service management software that manage increasingly complex and distributed IT environments in alignment with business priorities. Using sophisticated modeling, analysis, and automation technologies, Cisco NCC provides end-to-end insight into how IT health relates to business services. It automatically pinpoints service-affecting faults and calculates their business impact, giving you the information you need to maximize service delivery while lowering operating costs and reducing business risk.

Cisco NCC builds on industry-leading, ready-to-use root cause and impact analysis technology that pinpoints connectivity problems in real time and identifies their impact. Cisco NCC extends that analysis from end to end across the IT environment, including multitechnology, multivendor networks; operations support system (OSS), packaged, and proprietary applications; and business services and processes.

When to Sell

Sell This Product	When a Customer Needs These Features
CiscoWorks Network Connectivity Center Products	• Eliminate time-consuming manual event analysis and ensure corrective action can begin early before significant network service problems arise
	• Faster problem isolation to prevent downtime and provide continuous availability of networked business applications
	• Easy to install right out-of-the-box with embedded knowledge of Cisco devices integrated into the tool so the need for costly and time-consuming development of custom rules and their implementation is not needed and saves valuable time

Key Features

- Fast, accurate discovery of the entire environment
- Built-in information model that maps components and their relationships across layers
- Automated root cause analysis-no rules writing required.
- Business impact analysis that aligns IT with business objectives
- Advanced automation, including analysis, escalation, and updates
- Scalable architecture to manage the world's largest infrastructures
- Flexible, Web-based dashboard views

Specifications

Feature[1]	CiscoWorks Network Connectivity Center Products
Software	Solaris 2.8 or 2.9, Windows 2000 Server, Windows XP (console only)

1. For complete Server and Client Hardware and Software requirements, please refer to the Product Literature or Installation documentation for specific details and requirements

Selected Part Numbers and Ordering Information[1]

CiscoWorks Network Connectivity Center Products

CNCC-NCMP1.1-50K9	Cisco NCC NCM production server;includes software and 50 devices and 1 console
CNCC-NCMP1.1-100K9	Cisco NCC NCM production server;includes software and 100 devices and 1 console
CNCC-ASMP-1.0-50	Cisco NCC Application Services Manager-includes 1 ASM RTU Production server license with 50 ASM Managed Hosts device licenses.
CNCC-ACMP-1.0-20	Cisco NCC Application Connectivity Monitor - includes 1 ACM RTU Production server License 20 device license.
CNCC-BIMP-1.0-K9	Cisco NCC Business Impact Manager - includes 1 BIM RTU Production server License.
CNCC-ATFP-1.0	Cisco NCC ATM/Frame Relay Manager ñ Includes 1 ATM/FR RTU Production server License and 20 ATM/FR Managed Devices licenses.
CNCC-MPVP-1.0-100	Cisco NCC MPLS VPN Manager - Includes 1 MPLS VPN RTU Production server License and 100 Managed CE Devices.
CNCC-RPP-1.0-50	Cisco NCC RPSM - Includes 1 NCM/ RPSM Manager Production RTU server License and 50 Managed RPSM Devices licenses.
CNCC-BDP-1.0-K9	Cisco NCC Business Dashboard - Includes 1 Business Dashboard RTU Production server License and 1 Business Dashboard Concurrent User License.
CNCC-RMP-1.0-K9	Cisco NCC Report Manager - Includes 1 Report Manager RTU Production server License and 1 Report Manager Named User License.

1. This is only a small subset of all parts available via URL listed under "For More Information". Some parts have restricted access or are not available through distribution channels.

For More Information

See the CiscoWorks Network Connectivity Center Products Web site:
http://www.cisco.com/en/US/products/ps5934/index.html

CiscoWorks Manager IP Telephony Environment Monitor

CiscoWorks IP Telephony Monitor (ITEM) is a suite of applications and tools that facilitate effective management of Cisco-based IP telephony implementations. ITEM is designed to manage AVVID and IOS-based telephony environments with specialized tools and processes appropriate to both large and small installations. ITEM consists of a product bundle as well as several optional components that can be downloaded from the Cisco Systems, Inc. website. CiscoWorks ITEM provides information and tools in three areas to instill high confidence that Cisco-based IP telephony environments are performing as expected.

CiscoWorks ITEM provides several tools that enable Operations and Help-desk personnel respond to customer issues and to maintain surveillance on the introduction and movement of IP telephones in their environment. These optional tools increase the awareness and accountability for telephony resources and can play an important role in enterprise security programs yet are simple to install and use.

CiscoWorks ITEM also provides tools for Operations and Administrative personnel to monitor and manage telephony resources requiring financial expenditures. These tools, part of an ongoing program to capture and record capacity management data, can be used in conjunction with HP OpenView Performance Insight: Cisco IP Telephony Statistics Report Pack to produce meaningful utilization and capacity reports.

When to Sell

Sell This Product	When a Customer Needs These Features
CiscoWorks IP Telephony Environment Monitor	• Network managers who need to effectively manage their converged networks while maintaining high confidence that their IP telephony environments are performing as expected • Network Managers who need to use synthetic traffic (replicating key forms of network activity associated with VoIP and IP telephony) to enable around-the-clock monitoring of key voice elements in the network

Key Features

The IP Telephony Monitor (ITM) is the primary application of the ITEM bundle. ITM tracks the health of IP telephony environments by proactively monitoring Cisco voice elements in the network to alert operations personnel to potential problems and to help minimize IP telephony service downtime. It supports the health monitoring of AVVID Cisco CallManager, Cisco AVVID IP telephony applications and platforms, IOS Telephony-based hardware, the gateways and gatekeepers, and in-line power switches. Main features of ITM are:

- Problem-focused fault analysis
- Synthetic traffic generation and monitoring
- Real-time Alerts and Activities Display
- Integration with CiscoWorks desktop
- Integration with enterprise management systems
- Support for Layer 2 and Layer 3 network devices
- Support of AVVID and IOS-based IP telephony applications and services
- Incremental device support

Optional Drop-In Modules

Fault History Manager

Fault History is an optional drop-in module (downloadable from Cisco.com Software Center) that provides a web-based tool to access historical fault and alert data from a database. The user has several filtering options that can facilitate the search for specific information.

IP Phone Information Utility

The IP Phone Information Utility is an optional drop-in module (downloadable from Cisco.com Software Center) that provides a web-based tool to show detailed information about individual IP telephone. The operator can access the IP phone information by using its extension number, IP address, and/or MAC address. This utility bases its information on the devices created in VHM.

IP Phone Help Desk Utility

The IP Phone Help Desk Utility is an optional applet (downloadable from Cisco.com Software Center) that provides a MS Windows 2000 desktop tool to show summary information about individual IP telephone. The help desk operator can access the IP phone information by using its extension number (or can configure the application to search by IP or MAC addresses). This utility requires a connection to an ITEM server running VHM with the IP Phone Information Utility installed.

Gateway Statistics Utility

When available, the Gateway Statistics Utility is an optional drop-in module (downloadable from Cisco.com Software Center) that provides a web-based tool to collect performance and behavior statistics about CCM-controlled IP telephony gateways. This statistical information can be subsequently exported for processing by reporting packages for capacity planning and trending information.

Specifications

Feature	CiscoWorks IP Telephony Environment Manager
Server	Hardware: IBM PC-compatible with 1 GHz or higher Pentium IV processor; UNIX (If DFM is on Unix platform; Sun UltraSPARCIII (Sun Blade 1000 Workstation or Sun Fire 280R Workgroup Server); (Dual processor system required for hosting multiple management solutions)
	Software: Windows 2000 Server or Professional Edition with Service Pack 2; Solaris 2.8
Client	Hardware: IBM PC-compatible computer with 300 MHz or higher Pentium processor; Windows NT 4 (Workstation & Server) with Service Pack 6a, Win 98 or Windows 2000 Professional & Server with Service Pack 2
	Browser: Windows 98/NT/2000: Netscape v4.77, 4.78, 4.79; Windows 98/NT/2000: Internet Explorer v5.5 with Service Pack 2, 6.0

Selected Part Numbers and Ordering Information

CiscoWorks IP Telephony Environment Monitor

CWITEM-2.0-WIN-K9	CiscoWorks IP Telephony Environment Monitor 2.0 (Windows) for new customer installations; includes IP Telephony Monitor (ITM); this suite is intended for enterprise customers
CWITEM-2.0-ADD-K9	CiscoWorks IP Telephony Environment Monitor 2.0 (Windows) Add-On Kit for existing LMS 2.X customers; includes IP Telephony Monitor (ITM); this suite is intended for enterprise customers
CWITEM-2.0-UP-K9	Upgrade kit for existing IP Telephony Environment Monitor customers; includes IP Telephony Monitor (ITM). This suite is intended for the Enterprise customers
CWITEM-2.0-MV-K9	CiscoWorks IP Telephony Environment Monitor Multi-View 2.0 (Windows) for new customer installations; includes IP Telephony Monitor (ITM) Multi-View; this suite is intended for service provider customers

For More Information

See the CiscoWorks IP Telephony Environment Monitor Web site at:
http://www.cisco.com/go/cwvoip

CiscoWorks Voice Manager for Voice Gateways

CiscoWorks Voice Manager (CVM) 2.3 is a Web-based voice management and reporting solution. The application provides enhanced capabilities to configure and provision voice ports, and to create and modify dial plans on voice-enabled Cisco routers for voice-over-IP (VoIP), voice-over-Frame Relay (VoFR), and voice-over-ATM (VoATM) network deployments.

When to Sell

Sell This Product	When a Customer Needs These Features
Voice Manager for Voice Gateways	• Network managers who need to maintain a distributed network architecture for increased scalability • Network Managers who need to manage multiple customer networks from one common server

Key Features

- Integration with CiscoWorks—Manage a wide variety of router and switch functions through the CVM integration with CiscoWorks, which provides a common platform for running different applications
- Multiple platform support—Supported Platforms: Cisco 1700, 2600, and 3600 series, Cisco MC3810 Multiservice Access Concentrator, Cisco AS5300, AS5350, AS5400, and AS5800 series universal access servers, and Cisco 7200 and 7500 series routers
- GUI-based voice ports, dial-plan generation management—Create and manage local dial plans and VoIP, VoFR, and VoATM network dial plans

Specifications

Feature	CiscoWorks Voice Manager for Voice Gateways
Server Hardware Requirements	Windows: 512 MB, Twice as much swap space as memory, 2 GB of disk space, 500 MHz, 10 MB in temporary directory, NTFS file system required for security option
	Solaris: Sparc Ultra 10, 256 MB, Same amount of swap space as memory, 2GB of disk space
Server Software Requirements	Windows: Windows 2000 Professional and Server, SP 3 and SP 4
	(Solaris: Solaris 2.7 or 2.8
Client Hardware Requirements	Windows: 128 MB, IBM PC-compatible 300-MHz Pentium processor
	Solaris: Sparc Ultra 10, 128 MB
Client Software Requirements	Windows: Windows 2000 or Windows XP
	Solaris: Solaris 2.7 or 2.8
	Display Setting: 1024 x 768 resolution, 16-bit color palette

Selected Part Numbers and Ordering Information[1]

CiscoWorks Voice Manager for Voice Gateways

CWVM-2.3-K9	CiscoWorks Voice Manager 2.2 for Windows and Solaris; includes Voice Manager 2.2, and Common Services 2.2 with CiscoView (CV) 5.5
CWVM-2.3-UP-K9	Upgrade to CVM 2.3 for Windows and Solaris from CVM 1.X.
CWVM-2.3-MR-K9	Minor updates to CVM 2.3 for Windows and Solaris for customers currently using CVM 2.X.

1. This is only a small subset of all parts available via URL listed under "For More Information". Some parts have restricted access or are not available through distribution channels.

For More Information

See the Voice Manager for Voice Gateways Web site at:
http://www.cisco.com/en/US/products/sw/cscowork/ps2432/index.html

CiscoWorks QoS Policy Manager

QoS Policy Manager allows you to centrally define and administer IOS and CAT parameters needed for differentiating network traffic. This ensures high availability and predictable performance for business-critical which rely on advanced voice and video services. Cisco QoS Policy Manager (QPM) 3.2 is a key enabler of end-to-end QoS for converged networks. It delivers differentiated services across network infrastructures with converged voice, video, and data applications, simply by taking advantage of Cisco IOS and Catalyst OS Software with built-in QoS mechanisms in LAN and WAN switching and routing equipment.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco QoS Policy Manager	• End-to-end QoS configuration and automated, reliable policy deployment, while eliminating device-by-device command streams
	• Rules-based policies that combine static and dynamic port applications and host system traffic filters
	• QoS Policy Manager's services, including congestion management & avoidance, and traffic-shaping
	• Efficiently translate policies to specific QoS config commands, ensuring consistency across domains
	• Validate policies prior to deploying them quickly and reliably to LAN and WAN policy domains
	• Generate Web-based reports on QoS policies deployed in the network

Key Features

- Measure traffic throughput for top applications and service classes plus troubleshoot problems with real-time and historical QoS feedback
- Centrally define roles and permissions and take advantage of Cisco Secure Access Control Server (ACS) to control privileges for policy view, modification and deployment for different device groups
- Partition network into administrative and deployment domains and use policy libraries for global QoS configuration. Modify, scale and monitor IOS AutoQoS voice policies on routers
- Use the secure, Web-based graphical user interface (GUI) for accurate end-to-end QoS configuration and automated, reliable policy deployment, while eliminating device-by-device command streams
- Setup wizard intelligently determines QoS policies and properties at each network point that requires IP telephony QoS configuration based on Cisco AVVID design recommendations
- Achieve business-driven service levels across the enterprise network by configuring traffic classification and allowing QoS policy enforcement through Cisco devices
- An integral part of Cisco content networking, QPM 3.1 delivers the appropriate service levels to business-critical applications by supporting the extension of IP packet classification to include application signature, Web URLs, and negotiated ports
- Enables congestion management, congestion avoidance, and bandwidth control by selectively activating QoS mechanisms on intelligently grouped LAN and WAN interfaces and providing support for external application programming interfaces (APIs) to trigger event-based policy distribution
- Extend security by defining access control policies to permit or deny transport of packets into or out of device interfaces

- Expose QoS policy conflicts, uploads existing device configurations, presents command-line interface (CLI) syntax that corresponds to policies, allows previewing configuration changes before deployment, supports incremental access control list (ACL) updates, defines ACL ranges, and restores or applys a previous version of a policy database and backup to a remote server
- Supports device inventory import from CiscoWorks Resource Manager Essentials shortens configuration time for devices targeted for policy enforcement and QoS monitoring
- Web-based reporting enables a user to quickly view and analyze QoS policy management

Specifications

Feature	Cisco QoS Policy Manager
Server	Server Hardware: PC-compatible computer with 1-GHz or faster Pentium processor, CD-ROM drive, 10BASE-T or faster connection, 1-GB RAM, 9-GB available disk drive space, 2-GB virtual memory, Server Operating System
	CiscoWorks QPM requires the following operating systems: Windows 2000 Professional, Server, and Advanced Server (Service Pack 3 or 4). Support for Advanced Server requires that Terminal Services be turned off.
	Ports Used by QPM—CiscoWorks QPM on Windows uses the following ports, in addition to the ports used by CiscoWorks Common Services: 51099 Java Naming and Directory Interface (JNDI) lookup port, 51199 JRMP lookup port, 51299 Admin page port, 10033 (Windows) Database port, 51899 Protocol Data Packet (PDP) port
Client	Hardware—PC-compatible computer with 300-MHz or faster Pentium processor
	Client Operating System— Windows 2000 (Server or Professional Edition) with Service Pack 3 or 4, or Windows XP SP1 (Server or Professional)
	Client Browser—Windows with SP 3 and Windows XP clients: Microsoft Internet Explorer 6.0 or Internet Explorer 6.0 with Service Pack 1, Netscape Navigator 7.1; Windows clients with SP 4: Microsoft Internet Explorer 6.0 with Service Pack 1, Netscape Navigator 7.1

Selected Part Numbers and Ordering Information[1]

Cisco QoS Policy Manager

CWQPM-3.1-WINUR-K9	QoS Policy Mgr 3.1 for Windows (unrestricted device usage; 1 server installation license)
CWQPM-3.1-WINR-K9	QoS Policy Mgr 3.1 for Windows (20-device restricted usage; 1 server installation license)
CWQPM-3.1-URUP-K9	Upgrade to QPM 3.1 for Windows from QPM 1.x, 2.x or 3.0 to QPM 3.1 (unrestricted device usage; 1 server installation license)
CWQPM-3.1-URC-K9	Conversion of a QPM 3.1 20-device restricted usage license to unrestricted device usage license

1. This is only a small subset of all parts available via URL listed under "For More Information". Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the *Distribution Product Reference Guide* at: http://www.cisco.com/dprg (limited country availability).

For More Information

See the Cisco QoS Policy Manager Web site: **http://www.cisco.com/go/qpm**

CiscoWorks Wireless LAN Solution Engine

CiscoWorks WLSE is a centralized systems-level solution for managing the entire Cisco Aironet® WLAN infrastructure. Advanced air/radio frequency (RF) and device management tools eliminate complexity and give administrators visibility into the WLAN.

By quickly and easily detecting, locating, and disabling unauthorized (rogue) access points, CiscoWorks WLSE helps ensure security, while ensuring that policies are consistently applied throughout the network. This advanced capability can benefit any organization, including those that have not deployed WLANs but still want to guard against intruders.

New in 2.7 is self-healing WLANs, an advanced radio management feature that enables a Cisco Aironet Series access point to adjust its cell coverage area automatically to compensate for an adjacent disabled or failed access point. CiscoWorks WLSE further optimizes performance by detecting and locating RF interference, while proactively monitoring utilization and faults.

CiscoWorks WLSE automates a range of previously time-consuming and repetitive tasks, such as bulk firmware updates and mass configuration of access points and bridges. CiscoWorks WLSE may be transparently integrated with other network management systems (NMSs), operations support systems, and CiscoWorks applications. CiscoWorks WLSE runs on the CiscoWorks 1130 for Wireless LAN Solution Engine hardware platform, which is one rack unit high.

When to Sell

Sell This Product	When a Customer Needs These Features
CiscoWorks Wireless LAN Solution Engine	The CiscoWorks WLSE is ideal for enterprise customers: • Implementing large-scale Cisco Aironet WLAN infrastructures • Template-based configuration tool which can include a large number of uniform policies for Cisco access points and bridges • Access point and bridge mis-configuration alerts to minimize security vulnerabilities • Proactive fault and performance monitoring of Cisco access points, bridges, LEAP authentication server, and switches connected to the access points

Key Features

- Self-healing WLANs—If it detects that an access point has failed, it compensates by automatically increasing the power and cell coverage of nearby access points
- Additional device support—RF management support has been added for Cisco Aironet 1200 Series and Cisco Aironet 1100 Series access points with IEEE 802.11a and 802.11g radios, including Cisco Aironet 1200 Series dual mode radios (802.11a/802.11b and 802.11a/802.11g), and Cisco Aironet 1400 Series Wireless Bridge.
- Security and Wireless LAN Intrusion Detection System (IDS)—Protects organizations' RF environments and WLAN networks from unauthorized access
  - Integrated IDS—Standard Cisco Aironet access points are deployed with the radio (802.11a, b, or g) placed in multifunction mode to service client devices and to provide WLAN intrusion monitoring
  - Dedicated IDS—A dedicated access-point-only WLAN is deployed with the access point radio (802.11a, b, or g) placed in radio scan mode to support only WLAN intrusion monitoring
- Assisted site surveys and automated resite surveys—Automates the process of determining optimal access point radio transmit power and channel selection.
- Open Extensible Markup Language (XML) API—RF management data, in addition to network management data, may be accessed by third-party management systems using XML
- Real-time client tracking and reporting—A variety of reports, including real-time client tracking, present a powerful set of tools for troubleshooting and capacity planning

Selected Part Numbers and Ordering Information[1]

CiscoWorks Wireless LAN Solution Engine

CWWLSE-1130-19-K9	Wireless LAN Solution Engine 2.7; includes the Cisco 1130 hardware platform and wireless LAN management software version 2.7
CWWLSE-2.7-SWUP-K9	Software only upgrade kit for Wireless LAN Solution Engine 1.x customers wanting to upgrade their Cisco 1130 hardware to Wireless LAN management software version 2.7

For More Information

See the CiscoWorks Wireless LAN Solution Engine Web site:
http://www.cisco.com/go/wlse

CiscoWorks Hosting Solution Engine (HSE)

HSE is a turnkey network management appliance that monitors, activates, and configures a variety of e-business services in Cisco powered data centers. It provides up-to-date fault and performance information about network infrastructure and Layer 4-7 network services. The hardware running HSE is the Cisco 1140, which is a one rack unit (1RU) that enables convenient deployment on the same rack as the rest of other Cisco e-business networking devices.

HSE automatically discovers the entire data center infrastructure and instantly begins collecting statistics and management information, providing a current snapshot of the managed environment. It provides up-to-date information for operational staff to easily pinpoint the source of a problem and, itself, is a manageable Cisco device with a full Cisco Discovery Protocol implementation and supports Cisco MIB II.

When to Sell

Sell This Product	When a Customer Needs These Features
CiscoWorks Hosting Solution Engine	• Ideal for enterprise and service providers with e-business data center facilities
	• Granular user access model to partition network resources for Layer 4-7 services and switch ports, and authorize user group access to individual application services
	• Robust Layer 4-7 service configuration and service activation of server load balancing devices, including virtual servers, real servers, and content owners and rules

Key Features

- Granular user access model to partition network resources for Layer 4-7 services as well as for switch ports, and authorized user group access to individual application services
- Robust Layer 4-7 service configuration and service activation of content switches, including virtual servers, real servers, and content owners and rules
- Monitoring and reporting of SSL Proxy services on Cisco Catalyst 6000 Series with SSL Service Modules and Cisco Content Services Switch
- HTML-based, secure graphic user interface with easy customer view/report personalization and historical data reporting
- Upper layer NMS/OSS integration with SYSLOG, trap, email notifications and historical data XML export

Selected Part Numbers and Ordering Information[1]

Cisco 1105 Hosting Solution Engine

CWHSE1105-1.5-K9	CWHSE-1140-19-K9CiscoWorks Hosting Solution Engine; includes 1105 hardware platform with software version 1.7; can be configured for international power cords
CWHSE-1.8-SWMR-K9	Minor update kit for customers on HSE 1.x that do not have SAS support contracts; Includes minor update release for HSE 1.8

1. Some parts have restricted access or are not available through distribution channels. Resellers: For latest part number and pricing info, see the *Distribution Product Reference Guide* at: http://www.cisco.com/dprg (limited country availability).

For More Information

See the 1105 Hosting Solution Engine Web site: **http://www.cisco.com/go/hse**

Cisco Catalyst 6500 Series Network Analysis Module 1 and 2(with NAM software version 3.3)

The Cisco Network Analysis Module (NAM) 1 and 2, second generation high performance network analysis modules for the Cisco Catalyst 6500 Series provides network monitoring instrumentation and web-browser based traffic analysis for Catalyst based AVVID environments. The NAM enables network managers to gain application-level visibility into network traffic with the ultimate goal of improving performance, reducing failures, and maximizing returns on network investment. The new NAMs are available in two hardware versions, NAM-1 and NAM-2, to meet diverse network analysis needs in a scalable switching environment running up to gigabit speeds. The NAMs come with an embedded, Web-based traffic analyzer, which provides full scale remote monitoring and troubleshooting capabilities that are accessible through a Web browser.

When to Sell

Sell This Product	When a Customer Needs These Features
Catalyst 6500 Series Network Analysis Module 1 and 2 (with NAM software version 3.3)	• Needs Application-Level visibility built into the network • Provides network managers visibility into all layers of network traffic • Monitoring in a scalable switching environment that supports traffic monitoring in a scalable switching environment • Offers investment protection by interfacing with both the bus and the crossbar switching fabric-based architectures in the Cisco Catalyst 6500 Series

Key Features

- Provides application-level Remote Monitoring (RMON) functions based on RMON2 and other advanced Management Information Bases (MIBs)
- Collects statistics on both data and VoIP streams flowing through the host switch using the Switch Port Analyzer (SPAN) and NetFlow Data Export features of the Cisco Catalyst 6500 Series
- Collects data from remote switches using the remote SPAN (RSPAN) feature of the Cisco Catalyst 6500 and 4000 Series switches
- Easy to deploy and use at LAN aggregation where they can see most of the traffic, at service points where performance is critical and at important access points where quick troubleshooting is required
- Application monitoring can be done using RMON, RMON2, and several extended RMON MIBs, which can detect the applications on the network and provide detailed information about how these applications utilize the bandwidth, which hosts access those applications, and which client/server pairs generate the most traffic
- Performance management provides valuable information about the delays in server responses to client requests

Selected Part Numbers and Ordering Information[1]

Cisco Catalyst 6500 Series Network Analysis Module 1 and 2(with NAM software version 3.3)

WS-SVC-NAM-1	Catalyst 6500 Series Network Analysis Module 1. To order the NAM individually, please use the spare part number of WS-SVC-NAM-1=.
WS-SVC-NAM-2	Catalyst 6500 Series Network Analysis Module 2. To order the NAM individually, please use the spare part number of WS-SVC-NAM-2=.

1. Some parts have restricted access or are not available through distribution channels.

For More Information

See the Cisco NAM Web site:
http://www.cisco.com/en/US/products/hw/modules/ps2706/ps5025/index.html

Storage Networking

Storage Networking at a Glance

Product	Features	Page
Cisco SN 5400 Series Storage Router	Enables access to Fibre Channel attached storage systems anywhere on an IP network through Small Computer Systems Interface over IP (iSCSI); the first storage implementation based on IP standards.	10-2
	• Provides a full function Fibre Channel switch for small / medium businesses and enterprise workgroup storage area networks (SAN).	
Cisco MDS 9000 Family Multilayer Directors and Fabric Switches	• Industry-leading port densities across the Cisco MDS 9000 Family	10-3
	• Intelligent network services including VSANs, Port, Channels, embedded diagnostics and advanced security	
	• Embedded Fabric Manager, open API and integration with CiscoWorks RME and other third party SAN management platforms	
	• Multiprotocol support including Fibre Channel, FICON, Fibre Channel over IP (FCIP) and iSCSI. (Cisco MDS 9500 Series and Cisco MDS 9200 Series)	
	• Open platform for hosting third party storage applications (Cisco MDS 9500 Series and Cisco MDS 9200 Series)	
	• High availability directors with non-disruptive software upgrades, stateful processor restart/failover and redundancy of all major components	
Additional Storage Networking Solutions	• Cisco MDS 9000 Port Analyzer Adapter encapsulates Fibre Channel frames into Ethernet packets for low cost Ethernet based storage/SCSI protocol analysis	10-7
	• Cisco Coarse Wave Division Multiplexing (CWDM) Extended Distance Solution offers Small Form-Factor Pluggable (SFP) optics in 8 different wavelengths, enabling 2/1 Gbps Fibre Channel and 1 Gbps Ethernet ports to be directly connected to passive add/drop CWDM multiplexers.	
	• Cisco 7200 FCIP Port Adapter for long distance SAN connectivity over an IP network infrastructure	
	• Cisco ONS 15530/15540/15454 are Dense Wave Division Multiplexing (DWDM) platforms that provide transport across dark fibre for business continuance applications	

Cisco SN 5428-2 Series Storage Router

The multilayer Cisco SN 5428-2 allows small and
medium-sized businesses (SMBs) and enterprise workgroups to migrate servers from a
direct-attached-storage (DAS) to SAN environment, enabling highly effective
consolidation and utilization of storage assets with existing staff. The Cisco SN 5428-2
(Figure 1) provides extensive security capabilities that are critical for controlling access to
valuable storage resources and company information. Protecting businesses' most critical
asset-information-the Cisco SN 5428-2 allows you to access storage across LANs, MANs,
and WANs using FCIP or iSCSI protocols.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco SN 5428-2	• When a customer is moving from a DAS environment to a SAN and they do not already have a Fibre Channel switch, the SN 5428 provides a Fibre Channel switch and iSCSI ports to deliver a one system solution.
	• When a customer wants only a full function Fibre Channel switch, the SN 5428 is a very cost effective, low latency switch that fits perfectly in a Fibre Channel only implementation.
	• When a customer has block level applications and wants to maintain block level access to shared storage over IP data networks for a substantial reduction in attachment costs.
	• When a customer wants to run a business continuance application involving replication or data sources across geographically dispersed sites. By providing FCIP functionality, the Cisco SN 5428-2 enables sharing of SAN-based devices such as tape libraries and disk arrays.

Key Features

- Provides levels of security and access control beyond what is currently available in traditional SANs by including layer 2 and layer 3 protection to help resist unauthorized access to your storage resources
- Uses the TCP/IP protocol suite for storage networking which protects your existing investment in storage and networking infrastructure
- Fully integrates existing management and configuration tools
- Based on industry standards, maximizes your investment and enables you to reduce total cost of ownership for the increasing storage demands on your network
- Integrates provides standard IP networking capabilities with storage environments
- Designed for high-availability providing continuous access to critical data; extensive security features to protect valuable storage resources; and, full breadth of iSCSI drivers

Competitive Products

• Nishan	• FalconStor
• McDATA: Fibre Channel Switches	• Brocade: Fibre Channel switches
• Qlogic: Fibre Channel Switches	

Selected Part Numbers and Ordering Information[1]

Cisco SN 5428 Storage Router

SN5428-2	The SN 5428 provides two Gigabit Ethernet ports, supporting iSCSI, for connection to standard IP networks and eight Fibre Channel fabric switch ports.

Cisco SN 5428 Drivers & Firmware

SN5428-2-FW3XFK9	Cisco SN 5428-2 Firmware: 3.0.x minimum with FCIP
SN-ISCSI-DRV=	Cisco iSCSI drivers that support the Cisco SN 5428 2.2.x firmware: Windows NT, Windows 2000, Linux, Solaris, HP/UX, AIX

Cisco SN 5428 SFP: Small Form Factor Pluggables

DS-SFP-FCGE-SW=	SFP for Fibre Channel/GE Multi-mode fiber with LC connector

Cisco SN 5420 Series Packaged SMARTnet Maintenance 8x5xNBD

CON-SNT-PKG10	Cisco SN 5428-2 Packaged SMARTnet 8x5xNBDCategory 10

For More Information

See the Cisco SN5428 Series Storage Router Web sites:
http://www.cisco.com/en/US/partner/products/hw/ps4159/ps2160/index.html

Cisco MDS 9000 Family Multilayer Directors and Fabric Switches

Consisting of the Cisco MDS 9500 Series of Multilayer Directors, the semi-modular Cisco MDS 9200 Series Multilayer Fabric Switches, and the fixed configuration Cisco MDS 9100 Series Multilayer Fabric Switches, the Cisco MDS 9000 Family provides a full line of products to meet requirements for storage networks of all sizes and architectures. The Cisco MDS 9000 Family delivers intelligent network services such as virtual SANs (VSANs), comprehensive security, advanced traffic management, sophisticated diagnostics, and unified SAN management. In addition, the Cisco MDS 9500 Series and the Cisco MDS 9200 Series provide multiprotocol/multitransport integration and an open platform for embedding intelligent storage services such as network-based virtualization. With its multilayer approach to network and storage intelligence, the Cisco MDS 9000 Family ushers in a new era in storage networking.

When to Sell

Sell This Product	When a Customer Needs These Features
Cisco MDS 9500 Multilayer Directors	• Maximum port densities—Up to 224 Fibre Channel ports in a single 9-slot chassis • High availability—non-disruptive software upgrades, stateful processor restart/failover and redundancy of all major components • High performance—1.44 Terabit/sec backplane to provide 10Gbps future readiness • Multiprotocol support —integration of Fibre Channel, FICON, FCIP, and iSCSI in single platform • Hosting intelligent storage applications (network-based virtualization, volume management, data replication, and snapshot capabilities) • Modularity and flexibility for future growth
Cisco MDS 9200 Multilayer Fabric Switches	• Moderate port densities - Up to 48 Fibre Channel ports in a single 2-slot chassis • Multiprotocol support - integration of Fibre Channel, FCIP, and iSCSI in single platform • Hosting intelligent storage applications (network-based virtualization, volume management, data replication, and snapshot capabilities) • Modularity and flexibility for future growth
Cisco MDS 9100 Series Fabric Switches	• Lower port count—20 ports for Cisco MDS 9120; 40 ports for Cisco MDS 9140 • 1RU for space-constrained environments • Fibre Channel-only connectivity • Entry-level SAN where price per port more important than future modularity/flexibility

Key Features

- Configurable—provides embedded Cisco Fabric Manager, open APIs and integration with CiscoWorks RME and third party SAN and network management platforms
- Serviceable—delivers embedded diagnostics (Fibre Channel ping, traceroute and protocol analyzer) and "Call Home"
- Upgradeable—offers investment protection with multiple module options, all interchangeable across Cisco MDS 9500 Series and Cisco MDS 9200 Series;
- High availability—Cisco MDS 9500 Series directors provides nondisruptive software upgrades, stateful process failover and hot swappable components
- Secure—supports VSANs, hardware-enforced zoning, role-based access control, FC-SP, IPsec, SNMPv3, RADIUS and access control lists
- Multiprotocol—integrates Fibre Channel, FICON, iSCSI, and FCIP in one system (Cisco MDS 9500 Series and Cisco MDS 9200 Series)
- Flexible—introduces VSANs for consolidation of isolated SAN islands on a single physical fabric
- Scalable—offers16 to 224 Fibre Channel ports; supports throughput up to 32Gbps in a single Port Channel ISL

- High performance—Cisco MDS 9500 Directors supply 1.44 Terabits/sec of internal throughput ensuring readiness for future 10 Gbps integration
- Open—Cisco MDS 9500 Series directors and Cisco MDS 9200 Series provide open platform for network-based storage applications

Specifications

Feature	MDS 9509 Director	MDS 9506 Director	MDS 9216 Fabric Switch	MDS 9100 Fabric Switches
Modular Slots	9 slots: 2 for supervisors, 7 for connectivity	6 slots: 2 for supervisors, 4 for connectivity	2 slots: 1 fixed configuration, 16 Fibre Channel ports: 1 slot for connectivity	fixed configuration, Fibre Channel ports
Maximum Number of Ports per Switch	224 Fibre Channel ports	128 Fibre Channel ports	48 Fibre Channel ports	MDS 9120/9140: 20 and 40 Fibre Channel ports, respectively
Multiprotocol/ Multitransport	Yes: Fibre Channel, FCIP, iSCSI, IP-FC and FICON	Yes: Fibre Channel, FCIP, iSCSI, IP-FC and FICON	Yes: Fibre Channel, FCIP, iSCSI, IP-FC and FICON	No: Fibre Channel only
High Availability:	Non-disruptive software upgrades, stateful failover, process re-startability, system health monitoring, hot swap: optics, power supplies, fans, supervisors, switching and services modules	Same as MDS 9509 Director	Stateful failover, process re-startability, system health monitoring, hot swap: optics, power supplies, fans, switching and services modules	Stateful failover, process re-startability, system health monitoring, hot swap: optics, power supplies, and fans
Intelligent Network Services: VSANs, PortChannels, Diagnostics, Security, Traffic Mgmt, QoS	Yes	Yes	Yes	Yes
Platform for Hosting network-based storage applications (virtualization, volume mgmt, data replication)	Yes	Yes	Yes	No
Embedded Fabric Management, open API, integration with CiscoWorks, third party SAN and network mgmt platforms	Yes	Yes	Yes	Yes
Dimensions (HxWxD)	24.5 x 17.25 x 18.4 in.	12.25 x 17.37 x 21.75 in	5.25 x 17.32 x 22.66 in	1.75 x 17.2 x 23.1 in
Max Buffer Credits per port	255 per port in the 16 port line card; 12 per port in the 32 port line card	Same as MDS 9509 Director	255 per port in the 16 port line card and in the fixed module; 12 per port in the 32 port line card	255 per port (target-optimized ports); 12 per port (host-optimized ports)
Port Channel	Up to 16 ports per Port Channel across switching modules	Up to 16 ports per Port Channel across switching modules	Up to 16 ports per Port Channel across switching modules	Cisco MDS 9120: Up to 7 ports; Cisco MDS 9140: up to 15 ports
Optics Support	Fibre Channel Ethernet and CWDM	Same as MDS 9509 Director	Same as MDS 9509 Director	Same as MDS 9509 Director
HW enforced Zoning Support	N_Port WWN, F_Port WWN, N_Port FCID, Port Broadcast,	Same as MDS 9509 Director	Same as MDS 9509 Director	Same as MDS 9509 Director
Default, LUN, Read Only	Yes	Yes	Yes	Yes
Security	Role-based access control, VSAN-based access control, Port security, RADIUS, TACACS+, SNMPv3, FC-SP, SSH, SSL, SFTP and IPsec	Same as MDS 9509 Director	Same as MDS 9509 Director	Role-based access control, VSAN-based access control, Port security, RADIUS, TACACS+, SNMPv3, FC-SP, SSH, SSL, and SFTP

Selected Part Numbers and Ordering Information[1]

MDS 9500 Base Configuration

DS-C9506	MDS 9506 Chassis
DS-C9506=	MDS 9506 Chassis, Spare
DS-C9509	MDS 9509 Chassis
DS-C9509=	MDS 9509 Chassis, Spare
DS-X9530-SF1-K9	MDS 9500 Supervisor/Fabric I
DS-X9530-SF1-K9=	MDS 9500 Supervisor/Fabric I, Spare

MDS 9000 Modules

DS-X9016	MDS 9000 16-port 1 / 2 Gbps FC Module
DS-X9016=	MDS 9000 16-port 1 / 2 Gbps FC Module, Spare
DS-X9032	MDS 9000 32-port 1 / 2 Gbps FC Module
DS-X9032=	MDS 9000 32-port 1 / 2 Gbps FC Module, Spare
DS-X9032-SMV	MDS 9000 Advanced Services Module
DS-X9032-SMV=	MDS 9000 Advanced Services Module , Spare
DS-X9560-SMC	MDS 9000 Caching Services Module
DS-X9560-SMC=	MDS 9000 Caching Services Module. Spare
DS-X9302-14K9	MDS 9000 2-port GE and 14-port FC Module
DS-X9302-14K9=	MDS 9000 2-port GE and 14-port FC Module, Spare
DS-X9304-SMIP	MDS 9000 4-port 1GE IP Storage Services Module
DS-X9304-SMIP=	MDS 9000 4-port 1GE IP Storage Services Module. Spare
DS-X9308-SMIP	MDS 9000 8-port 1GE IP Storage Services Module
DS-X9308-SMIP=	MDS 9000 8-port 1GE IP Storage Services Module, Spare
DS-SFP-FC-2G-SW	2 Gbps Fibre Channel-SW SFP, LC
DS-SFP-FC-2G-SW=	2 Gbps Fibre Channel-SW SFP, LC, Spare
DS-SFP-FC-2G-LW	2 Gbps Fibre Channel-LW SFP, LC
DS-SFP-FC-2G-LW=	2 Gbps Fibre Channel-LW SFP, LC, Spare
DS-SFP-FCGE-SW	1 Gbps Ethernet and 2 Gbps Fibre Channel-SW SFP, LC
DS-SFP-FCGE-SW=	1 Gbps Ethernet and 2 Gbps Fibre Channel-SW SFP, LC, Spare
DS-SFP-FCGE-LW	1 Gbps Ethernet and 2 Gbps Fibre Channel-LW SFP, LC
DS-SFP-FCGE-LW=	1 Gbps Ethernet and 2 Gbps Fibre Channel-LW SFP, LC, Spare

MDS 9500 Power Supplies and Cord Options

CAB-2500W-US1	Power Cord, 250VAC 20A, Straight C19, NEMA 6-20 Plug, US
CAB-2500W-US2	Power Cord, 250VAC 20A, Straight C19, NEMA L6-20 Plug, US
CAB-2500W-EU	Power Cord, 250VAC 16A, Straight C19, CEE 7/7 Plug, EU
CAB-2500W-INT	Power Cord, 250VAC 20A, Straight C19, IEC 309 Plug, INTL
CAB-2500W-SW	Power Cord, 250VAC 16A, Straight C19, 23G Plug, SWITZ
CAB-2500W-SA	Power Cord, 250VAC 16A, Straight C19, South Africa
DS-CAC-2500W	2500W AC Power Supply
DS-CAC-2500W=	2500W AC Power Supply, Spare
DS-CDC-2500W	2500W DC Power Supply
DS-CDC-2500W=	2500W DC Power Supply, Spare
DS-CAC-4000W-US	4000W AC Power Supply for US (cable attached)
DS-CAC-4000W-US=	4000W AC Power Supply for US (cable attached), spare
DS-CAC-4000W-INT	4000W AC Power Supply International (cable attached)
DS-CAC-4000W-INT=	4000W AC Power Supply International (cable attached), spare
DS-CAC-1900W	1900W AC Power Supply
DS-CAC-1900W=	1900W AC Power Supply, Spare

Additional MDS 9500 Power Cord Options

CAB-1900W-US1	Power Cord, 250VAC 20A, Right Angle C19, NEMA 6-20 Plug, US
CAB-1900W-US2	Power Cord, 250Vac 20A, Right Angle C19, NEMA L6-20 Plug, US
CAB-1900W-EU	Power Cord, 250VAC 16A, Right Angle C19, CEE 7/7 Plug, EU
CAB-1900W-INT	Power Cord, 250Vac 20A, Right Angle C19, IEC 309 Plug, INTL
DS-CDC-1900W	1900W DC Power Supply
DS-CDC-1900W=	1900W DC Power Supply, Spare

MDS 9500 Memory Options

MEM-MDS-FLD512M	MDS 9500 Sup Compact Flash Disk, 512MB
MEM-MDS-FLD512M=	MDS 9500 Sup Compact Flash Disk, 512MB, Spare

MDS 9200 Base Configuration

DS-C9216-K9	MDS 9216 16-port 2Gbps FC + 1-slot Modular Switch
DS-C9216A-K9	MDS 9216A 16-port 2Gbps FC + 1-slot Modular Switch
DS-C9216i-K9	MDS 9216i 14-port FC and 2-port GE + 1-slot Modular Switch

MDS 9200 Power Supplies and Cord Options

CAB-7KAC	AC Power Cord (North America)
CAB-7KACA	AC Power Cord (Australia)
CAB-7KACE	AC Power Cord (Europe)
CAB-7KACI	AC Power Cord (Italy)
CAB-7KACU	AC Power Cord (UK)
CAB-7KACR	AC Power Cord (Argentina)
CAB-7KACSW	AC Power Cord, 250VAC 10A, Straight C15, MP232 Plug, SWITZ
CAB-7KACSA	AC Power Cord (South Africa)
DS-CAC-845W	845W AC Power Supply
DS-CAC-845W=	845W AC Power Supply, Spare

MDS 9100 Base Configuration

DS-C9140-K9	MDS 9140 40-Port Fibre Channel Fabric Switch
DS-C9120-K9	MDS 9120 20-Port Fibre Channel Fabric Switch
DS-CAC-300W	300W AC Power Supply
DS-CAC-300W=	300W AC Power Supply, Spare

MDS Software

M95S1K9-1.3.4	MDS 9500 Supervisor/Fabric-I, Enterprise SW, Release 1.3.4
M92S1K9-1.3.4	MDS 9200 Supervisor/Fabric-I, Enterprise SW, Release 1.3.4
M91S1K9-1.3.4	MDS 9100 Supervisor/Fabric-I, Enterprise SW, Release 1.3.4
M95S1K9-2.0.1	MDS 9500 Supervisor/Fabric-I, SAN-OS Software Release 2.0.1
M92S1K9-2.0.1	MDS 9200 Supervisor/Fabric-I, SAN-OS Software Release 2.0.1
M91S1K9-2.0.1	MDS 9100 Supervisor/Fabric-I, SAN-OS Software Release 2.0.1

MDS licensed features

M9500EXT1K9	FCIP license for 1 8-Port IP Storage module in MDS9500
M9500EXT1K9=	FCIP license for 1 8-Port IP Storage module in MDS9500, spare
M9200EXT1K9	FCIP license for 1 8-Port IP Storage module in MDS9200
M9200EXT1K9=	FCIP license for 1 8-Port IP Storage module in MDS9200, spare
M9500EXT14K9	FCIP license for 1 4-Port IP Storage module in MDS9500
M9500EXT14K9=	FCIP license for 1 4-Port IP Storage module in MDS9500, spare
M9200EXT14K9	FCIP license for 1 4-Port IP Storage module in MDS9200
M9200EXT14K9=	FCIP license for 1 4-Port IP Storage module in MDS9200, spare
M9500FIC1K9	MDS 9500 Mainframe Package license for 1 MDS 9500 switch
M9500FIC1K9=	MDS 9500 Mainframe Package license for 1 MDS 9500 switch, spare
M9200FIC1K9	MDS 9200 Mainframe Package license for 1 MDS 9200 switch
M9200FIC1K9=	MDS 9200 Mainframe Package license for 1 MDS 9200 switch, spare
M9500SSE1K9	Storage Services Enabler pkg: 1 ASM on 1 MDS9500
M9500SSE1K9=	Storage Services Enabler pkg: 1 ASM on 1 MDS9500, Spare
M9200SSE1K9	Storage Services Enabler pkg: 1 ASM on 1 MDS9200
M9200SSE1K9=	Storage Services Enabler pkg: 1 ASM on 1 MDS9200, Spare
M9500FMS1K9	MDS 9500 Fabric Manager Server license for 1 MDS 9500 switch
M9500FMS1K9=	MDS 9500 Fabric Manager Server license for 1 MDS 9500 switch, Spare
M9200FMS1K9	MDS 9200 Fabric Manager Server license for 1 MDS 9200 switch
M9200FMS1K9=	MDS 9200 Fabric Manager Server license for 1 MDS 9200 switch, Spare
M9100FMS1K9	MDS 9100 Fabric Manager Server license for 1 MDS 9100 switch
M9100FMS1K9=	MDS 9100 Fabric Manager Server license for 1 MDS 9100 switch, Spare
M9500ENT1K9	MDS 9500 Enterprise Package license for 1 MDS 9500 switch
M9500ENT1K9=	MDS 9500 Enterprise Package license for 1 MDS 9500 switch, spare
M9200ENT1K9	MDS 9200 Enterprise Package license for 1 MDS 9200 switch
M9200ENT1K9=	MDS 9200 Enterprise Package license for 1 MDS 9200 switch, spare
M9100ENT1K9	MDS 9100 Enterprise Package license for 1 MDS 9100 switch
M9100ENT1K9=	MDS 9100 Enterprise Package license for 1 MDS 9100 switch, spare

Port Analyzer Adapter

DS-PAA-2	MDS 9000 Port Analyzer Adapter

Port Analyzer Adapter Power Cord Options

CAB-2WIRE-ARG	Power Cord, 250VAC 2.5A, C7 coupler, Argentina
CAB-2WIRE-AUS	Power Cord, 250VAC 2.5A, C7 coupler, BS 1363 plug, Australia
CAB-2WIRE-EU	Power Cord, 250VAC 2.5A, C7 coupler, EN 50075 plug, EU
CAB-2WIRE-US	Power Cord, 125VAC 3A, C7 coupler, NEMA 1-15P plug, US
CAB-2WIRE-UK	Power Cord, 250VAC 2.5A, C7 coupler, AS 3112 plug, UK
CAB-2WIRE-KOR	Power Cord, 250VAC 2.5A, C7 coupler, Korea

Fiber Optic Cables

CAB-MM-LCLC-1M	Fiber Optic Cable, Multimode, LC/LC, 1 Meter
CAB-MM-LCLC-5M	Fiber Optic Cable, Multimode, LC/LC, 5 Meter
CAB-MM-LCLC-25M	Fiber Optic Cable, Multimode, LC/LC, 25 Meter
CAB-CP-SCLC-8IN	Fiber Optic Cable, Coupler, SC/LC, 8 Inch
CAB-CP-LCSC-2M	Fiber Optic Cable, Coupler, LC/SC, 2 Meter

CWDM Solution

CWDM-SFP-1470=	1470 NM CWDM Gigabit Ethernet and 2 Gbps FC SFP
CWDM-SFP-1490=	1490 NM CWDM Gigabit Ethernet and 2 Gbps FC SFP
CWDM-SFP-1510=	1510 NM CWDM Gigabit Ethernet and 2 Gbps FC SFP
CWDM-SFP-1530=	1530 NM CWDM Gigabit Ethernet and 2 Gbps FC SFP
CWDM-SFP-1550=	1550 NM CWDM Gigabit Ethernet and 2 Gbps FC SFP
CWDM-SFP-1570=	1570 NM CWDM Gigabit Ethernet and 2 Gbps FC SFP
CWDM-SFP-1590=	1590 NM CWDM Gigabit Ethernet and 2 Gbps FC SFP
CWDM-SFP-1610=	1610 NM CWDM Gigabit Ethernet and 2 Gbps FC SFP
CWDM-MUX-4=	4 Wavelength Add/Drop MUX for CWDM-CHASSIS-2=
CWDM-MUX-8=	8 Wavelength Mux/Demux Plug in Module for CWDM-CHASSIS-2=
CWDM-CHASSIS-2=	2 Slot Chassis for CWDM Mux Plug in Modules
CAB-SM-LCSC-1M	Fiber Optic Cable, Single mode, LC/SC, 1 Meter
CAB-SM-LCSC-5M	Fiber Optic Cable, Single mode, LC/SC, 5 Meter

For More Information

See the Cisco MDS 9000 Family at Web site: **http://www.cisco.com/go/storage**

Additional Storage Networking Solutions

Cisco MDS 9000 Port Analyzer Adapter—Reducing Time to Problem Resolution

The Cisco MDS 9000 Port Analyzer Adapter enables effective, low-cost analysis of Fibre Channel traffic anywhere in the network at any time, simplifying debug of network problems and reducing time to problem resolution. The device is a "plug-and-play" accessory for the Cisco MDS 9000 Family that enables simple, transparent analysis of Fibre Channel traffic in a switched fabric, eliminating the need for expensive standalone protocol analyzers.

Cisco MDS 9000 Optical Modules—Optimizing SAN Interconnect

The Cisco MDS 9000 Family optical interface modules offer a broad range of SAN connectivity solutions for both local and extended reach. SFP modules for the Cisco MDS 9000 are available in either short-wave or long-wave options supporting Fibre Channel and Gigabit Ethernet connections over distances of up to 500 meters and 10 kilometers, respectively. Cisco CWDM SFPs and passive add/drop multiplexers provide cost-effective, multiprotocol, extended-distance connectivity by optimizing the use of the existing optical infrastructure.