Cisco Products
Quick Reference Guide
April 2003

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Introduction

Cisco Products Quick Reference Guide (CPQRG)

CPQRG Background

The Cisco Products 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, the Cisco Connection Online (CCO) 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. Note: 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.

CPQRG Ordering Information

Additional printed copies of this book can be purchased on an as-needed basis or through an annual subscription. To order, see http://shop.cisco.com/login.

For questions regarding the CPQRG ordering process, please send an email to companystore@external.cisco.com.

For questions, comments or to download an Adobe PDF version of the CPQRG, go to http://www.cisco.com/go/guide.

How to Get More Complete Product Information

<table>
<thead>
<tr>
<th>Cisco Product Catalog</th>
<th>For more comprehensive information on all of Cisco’s products, please refer to the Cisco Product Catalog at: <a href="http://www.cisco.com/univercd/cc/td/doc/pdlist/n575e.htm">http://www.cisco.com/univercd/cc/td/doc/pdlist/n575e.htm</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco Connection Online (CCO)</td>
<td>For even more complete product and solution information, please go to CCO at <a href="http://www.cisco.com">http://www.cisco.com</a>. In addition to product, technology, and network solutions support, CCO 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.</td>
</tr>
</tbody>
</table>
Cisco Systems Overview

Cisco Systems, Inc. is the worldwide leader in networking for the Internet. Cisco’s Internet Protocol-based (IP) networking solutions are the foundation of the Internet and most corporate, education, and government networks around the world. Cisco provides the broadest line of solutions for transporting data, voice and video within buildings, across campuses, or around the world.

Today, the Internet and computer networking are an essential part of business, learning and personal communications and entertainment. Virtually all messages or transactions passing over the Internet are carried quickly and securely through Cisco equipment. Cisco solutions ensure that networks both public and private operate with maximum performance, security, and flexibility. In addition, Cisco solutions are the basis for most large, complex networks used by corporations, public institutions, telecommunication companies, and are found in a growing number of medium-sized commercial enterprises.

Cisco was founded in 1984 by a group of computer scientists from Stanford University. Since the company’s inception, Cisco engineers have been prominent in advancing the development of IP—the basic language to communicate over the Internet and in private networks. The company’s tradition of innovation continues today with Cisco creating leading products and key technologies that will make the Internet more useful and dynamic in the years ahead. These technologies include: advanced routing and switching, voice and video over IP, optical networking, wireless, storage networking, security, broadband, and content networking.

In addition to technology and product leadership, Cisco is recognized as an innovator in how business is conducted. The company has been a pioneer in using the Internet to provide customer support, sell products, offer training, and manage finances. Drawing upon the company’s own Internet best practices and core-value of customer focus, Cisco has established the Internet Business Solutions Group (IBSG) dedicated to helping top business leaders transform their own businesses into e-businesses.

As a company, Cisco operates on core values of customer focus and corporate citizenship. The company’s philanthropic efforts are committed to helping communities prosper while also encouraging Cisco employees to learn about the needs of the communities where Cisco operates. Also, to help bolster education around the world, the company has founded Cisco Networking Academies in 128 countries dedicated to teaching students to design, build, and maintain computer networks.
**Cisco Channel Partner Program**

Whether you provide services, solutions or a combination of both, Cisco is committed to your success. The Cisco Channel Partner Program can help partners create a sustainable business model in a fast-changing environment, where customers require value-added services, focused technical expertise, and higher levels of satisfaction. As a Cisco certified partner, you’ll have the backing of the Cisco brand, and access to world-class products and service packages, technical support, productivity tools, online training, marketing resources and sales promotions.

The Partner Program integrates the technology focus of each Cisco Partner Specialization, flexible individual career certification requirements, customer satisfaction targets, and pre- and post-sales support capabilities. These elements make up the points-based structure of the overall program requirements. There are three partner certification levels: Gold Certification, Silver Certification, and Premier Certification.

The Partner Program requires every partner to specialize in technology areas as part of the program requirement. You may choose the technology area for Specialization, but must earn a minimum number of Specialization points to become certified. You may decide to be strictly a specialized partner or specialize your organization as a means to achieving certification. Either way, you’ll have access to structured training roadmaps, free online technical and sales education and video-on-demand content to build your knowledge and skill level through the Partner E-Learning Connection [http://cisco.partnerelearning.com](http://cisco.partnerelearning.com)

**For More Information**

See the Channel Partner Program Web Site:

If you are interested in reselling Cisco product without becoming certified or specialized, see [http://www.cisco.com/go/reseller](http://www.cisco.com/go/reseller)

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**Reseller and Customer Support**

**Reseller Sales and Technical Assistance Contact Information**

<table>
<thead>
<tr>
<th>Customer Help Lines</th>
<th>Contact Information</th>
</tr>
</thead>
</table>
| **US Distribution Presales Helplines**¹ | Comstor: 800-COMSTOR, option 3  
Ingram Micro: 800-445-5066, enter Ingram customer & dial extension 24041  
Tech Data: 800-237-8931, extension 77776 |
| **Presales – Partner/Reseller Helpline** | 800-553-8387 (within U.S.)  
408-526-7208 (outside U.S.)  
http://CiscoPartner.custhelp.com/ |
| **Post-Sales – Technical Assistance Center (TAC)** | 800-553-8387 (within U.S.)  
408-526-7209 (outside U.S.)  
tac@cisco.com (e-mail) |

¹. Follow voice prompts to access: Pre-sales Assistance of Network Validation & Product Information, Reseller Support, Customer Service, Service Contract Sales, Reporting a technical problem/open a trouble ticket, and Seminars, Events, Training & Certification
### Helpful Cisco Web Sites

<table>
<thead>
<tr>
<th>Cisco Web Site</th>
<th>URL</th>
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</thead>
<tbody>
<tr>
<td>Partner Relationship Central</td>
<td><a href="http://www.cisco.com/go/prc">http://www.cisco.com/go/prc</a></td>
</tr>
<tr>
<td>Cisco Subscription Service</td>
<td><a href="http://shop.cisco.com/login">http://shop.cisco.com/login</a></td>
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<tr>
<td>Cisco Subscription Service</td>
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<tr>
<td>Cisco Subscription Service</td>
<td><a href="http://shop.cisco.com/login">http://shop.cisco.com/login</a></td>
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1. Additional CCO access required for most URLs.
Partner and Reseller Service and Support Offerings

Various partner and reseller service and support programs are available according to certification level and method of purchase from Cisco:

<table>
<thead>
<tr>
<th>Method of Purchase</th>
<th>Service and Support Offerings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct from Cisco</td>
<td>• System Integrator Support—System Integrator Support (SIS) program is designed for Silver and Gold partners who wish to provide their own brand of support to their end customers with back-end support from Cisco.</td>
</tr>
<tr>
<td></td>
<td>• SMARTspares provides partners using SIS98 the opportunity to leverage Cisco’s logistics infrastructure to provide their customers with enhanced delivery services.</td>
</tr>
<tr>
<td></td>
<td>• Shared Support—Currently only available in the US, Cisco’s Shared Support program is designed for Silver and Gold partners who wish to provide their own brand of support to their end customers while leveraging Cisco’s Technical Assistance Center (TAC) and logistics infrastructure.</td>
</tr>
<tr>
<td></td>
<td>• Cisco Brand Resale—Program allows partners to provide Cisco’s services (SMARTnet, etc.) directly to their end customers.</td>
</tr>
<tr>
<td>2-Tier (through a Distributor)</td>
<td>• Packaged Services—Partners and Resellers may purchase warranty extension, hardware replacement, installation and configuration, technical support, software upgrades, and online services. Several of these services have been bundled together to offer convenient service solutions for Cisco customers.</td>
</tr>
</tbody>
</table>

Packaged Resalable Service Products (only via Distributors/2-Tier):

<table>
<thead>
<tr>
<th>Product Description</th>
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<tbody>
<tr>
<td>Maintenance Services</td>
</tr>
<tr>
<td>SMARTnet Maintenance</td>
</tr>
<tr>
<td>• SMARTnet 8x5xNBD (Next Business Day)—8 hours/day, 5 days/week, next-business-day hardware replacement</td>
</tr>
<tr>
<td>• SMARTnet 8x5x4—8 hours/day, 5 days/week, 4-hour hardware replacement</td>
</tr>
<tr>
<td>• SMARTnet 24x7x4—24 hours/day, 7 days/week, 4-hour hardware replacement</td>
</tr>
<tr>
<td>Available through resellers and distributors.</td>
</tr>
<tr>
<td>SMARTnet Onsite</td>
</tr>
<tr>
<td>• SMARTnet Onsite 8x5xNBD—8 hours/day, 5 days/week, next-business-day response</td>
</tr>
<tr>
<td>• SMARTnet Onsite 8x5x4—8 hours/day, 5 days/week, 4-hour response</td>
</tr>
<tr>
<td>• SMARTnet Onsite 24x7x4—24 hours/day, 7 days/week, 4-hour response</td>
</tr>
<tr>
<td>Package SMARTnet OnSite 24x7x4 provides SMARTnet OnSite 24x7x4 service in a shrink-wrapped package, allowing it to be effectively marketed through resellers.</td>
</tr>
<tr>
<td>Cisco Advance Replacement</td>
</tr>
<tr>
<td>Software Application Support plus Upgrades (SASU)</td>
</tr>
<tr>
<td>Noncontract and Consulting Services</td>
</tr>
<tr>
<td>Startup Services</td>
</tr>
<tr>
<td>Total Implementation Services (TIS)</td>
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</tbody>
</table>

For More Information

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, ranging from One-Year to Limited Lifetime warranties. Note that all Warranties are applicable to original owner only and support is subject to product end-of-life terms.

For More Information
See the Web site:

Cisco Capital Financing

Cisco Systems Capital offers a variety of financing and equipment leasing alternatives, both short term and long term, to customers and partners in the United States, Canada, Europe, Asia, Australia, and Latin America. Cisco Capital’s financial solutions offer customers the ability to acquire new technologies or refresh existing equipment through flexible, easy-to-use programs.

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 Authorized Refurbished Equipment (US and Canada 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 Services

Cisco Services offers a wide range of services and support to customers, partners and resellers. Through a suite of support services Cisco enables you to improve the overall efficiency of your network operations and network performance, while benefiting from the broad range of Cisco engineering knowledge and experience base, leading practices and innovative, web-based tools.

Cisco Advanced Services (AS) is a comprehensive suite of professional engineering support offerings of Cisco networking solutions delivering the highest levels of availability, quality of service, and security for your specific network needs to realize business return on investment through high performance networking and communications applications enablement. Cisco Technical Support Services (TSS) offer leading-edge services to improve customer productivity, protect customer investment, and maximize operational efficiency. Cisco TSS solutions provide access to highly skilled engineers with technical expertise on multiple disciplines of technology. In addition, Cisco TSS provides you with the online tools and resources, software support and hardware replacement options to address your challenges and provide rapid problem resolution. Key support tools and knowledge provide your staff with the ability to avoid problems, maximize network utility, and expedite problem resolution.

For More Information

Technical Support Services:
Advanced Services:
## Routers at a Glance

<table>
<thead>
<tr>
<th>Product</th>
<th>Features</th>
<th>Page</th>
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<tr>
<td><strong>Cisco IOS® Software</strong></td>
<td>See the Chapter 9—Cisco IOS Software and Network Management for an overview of Cisco IOS Software</td>
<td>9-4</td>
</tr>
</tbody>
</table>
| **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 Router**    | Ethernet, ADSL, ADSL over ISDN, G.SHDSL, ISDN, and serial routers for small remote offices and teleworkers  
• 1-port Ethernet, 1-port ADSL, ADSL over ISDN or G.SHDSL or 1-port BRI (optional NT1), 1-port serial WAN  
• 4-port Ethernet hub or 10/100 switch on most models and 2 analog telephone ports on ISDN models and 4 analog voice ports on B71-4v  
• Advanced security features including stateful inspection firewall and hardware assisted encryption (B30 series)  
• Toll quality voice with VoIP (Cisco B27-4v)  
• Dial back up and out-of-band management (Cisco B30 series) | 1-9  |
| **Cisco 1700 Series Router**   | 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 VPHRs, integrated voice/data (VoIP), and broadband services  
• VLAN Capability  
• Supports up to three Ethernet connections with 1FE and 2 ENET WICs | 1-11 |
| **Cisco 2600 Series Router**   | Fixed-port configuration access servers  
• The Cisco AS2509-RJ/AS2511-R access/terminal servers provide Ethernet LAN connectivity and enable 8 or 16 (respectively) users/devices via async connections  
• Ideal for low-density analog telephone line dial access applications via external modems | 1-14 |
| **Cisco 2600 Series Router**   | Modular multiservice router  
• Single or dual LAN (Ethernet, 10/100 M bps Ethernet, Token Ring and mixed Ethernet options)  
• Wide variety of interface support, including integrated 16-port switching, high-density analog and digital voice, Cisco IOS Firewall and VPN, integrated 16-port switching, ADSL, and G.SHDSL, switching integration, and ATM support  
• Shares WAN interface cards and network modules with Cisco 1700, 3600 and 3700 series  
• The Cisco 2610XM, 2620XM, and 2650XM models offer the features of Cisco 2600 with more default memory, capacity, performance and FE support on all models | 1-16 |
| **Cisco 3600 Series Router**   | Modular multiservice high-density access router  
• 2-, 4-, and 6-slot models  
• Wide variety of media support including: high density analog and digital voice, Cisco IOS Firewall and VPN, integrated 16-port switching, ADSL, and G.SHDSL, sync and async serial, BRI and PRI ISDN, channelized T1/E1, Ethernet, Fast Ethernet, Token Ring, digital and analog modems, and ATM  
• Digital and analog voice/fax over IP or Frame Relay or ATM  
• The Cisco 3640 is no longer orderable. Customers are encouraged to migrate to the Cisco 3700 Series Routers. On an interim basis we have made available the Cisco 3640A as an alternative for customers with configurations not available on the Cisco 3700. | 1-22 |
<table>
<thead>
<tr>
<th>Product</th>
<th>Features</th>
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<tbody>
<tr>
<td>Cisco 3700 Series Router</td>
<td>Modular multifunctional high-density access router - Supports integrated firewall, intrusion detection, and VPN capabilities and offloads processing to on-board Advanced Integration Module (AIM) - Combines flexible routing and low density switching in a single platform with new 16 and 36-port EtherSwitch module - Delivers internal in-line power for the EtherSwitch ports for a single platform Branch Office IP Telephony and Voice Gateway - Higher performance enables scalable deployment of multiple, concurrent applications - Wide variety of interface support, including integrated 36 and 16-port switching, high-density analog and digital, voice, Cisco IOS Firewall/IDS and VPN, Fractional and channelized T1/E1 / DS-3, Ethernet, Gigabit Ethernet and ADSL.</td>
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<tr>
<td>Cisco 7100 Series VPN Router</td>
<td>Large branch and central site VPN router, for a dedicated site-to-site VPN solution</td>
<td>5-11</td>
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<tr>
<td>Cisco 7200 Series Router</td>
<td>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, TDDI, serial, ISDN, HSSI, ATM, Packet over SONET, DPT/RPR</td>
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<tr>
<td>Cisco 7300 Series</td>
<td>Network edge router with high performance IP services delivered at optical speeds for service 1-35 providers and enterprise networks - Compact and modular 4 rack unit chassis — 4 slots - High performance connectivity — T3 through OC-48/STM 16 with 3.5 Mpps performance - Built-in Gigabit Ethernet connectivity - Multiservice routing: IP, IPX, AppleTalk, DLSw - Compact size, high availability and optimal cooling</td>
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<tr>
<td>Cisco 7400 Series Router</td>
<td>Highest performance 1 rack unit router in the industry, with a stackable architecture that is designed for service provider and enterprise networks - One port adapter slot, two built-in 10/100/1000 Gigabit Ethernet ports, and a broad range of WAN media interfaces from DS0 to OC3 (40+ port adapters) common with Cisco 7x00-series port adapters - High-density broadband aggregation - Managed CPE for service provider demarcation point - Gigabit Ethernet to Gigabit Ethernet IP services applications platform</td>
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<tr>
<td>Cisco 7500 Series</td>
<td>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, TDDI, serial, ISDN, HSSI, ATM, and Packet over SONET</td>
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<tr>
<td>Cisco 7600 Series</td>
<td>Service provider and high-end enterprise-class router delivering optical WAN and Metropolitan Area Network services with high-touch IP services at the network edge. - Consolidated LAN/WAN/MAN in a single platform - Scalable backbone bandwidth from 32 Gbps to 256 Gbps and performance from 15 Mpps to 30 Mpps - High-volume aggregation of Ethernet traffic (server farms) - Wide range of WAN/MAN interfaces from NXS0, DS1, T3 to OC-48 with line rate services - Ideal for Internet data center, metropolitan aggregation, WAN edge aggregation, and enterprise core applications - Also supports Catalyst 6500 series line cards</td>
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<tr>
<td>Cisco 10000 Series</td>
<td>Service provider-class edge services router - High-Performance IP/MPLS, and Broadband Services — The Cisco 10000 Series enables service providers to deploy revenue-generating services without worrying about performance degradation - Carrier-Class High Availability — With its carrier-class high availability, the Cisco 10000 Series minimizes costly network outages and maximizing end-customer satisfaction - Application Integration — The Cisco 10000 Series leverages service providers’ current investments by enabling leased line and broadband aggregation features on a single platform - Application Flexibility — The Cisco 10000 Series has a broad range of channelized, clear channel, ATM and LAN interfaces. Physical interface speeds from E1/T1 up to OC-48/STM-16c</td>
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### Chapter 1  Routers

#### Sample Routing Solutions Overview — WAN & Internet Data Center

<table>
<thead>
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<th>Product</th>
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| 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-1c 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                                                                                                                                   | 1-49 |
| Cisco 12000 Series | Premier high-end routing portfolio for service provider backbone and high-speed edge applications. With its unique, modular distributed system architecture, the Cisco 12000 Series Router, is the industry choice for building Carrier IP/MPLS networks with its portfolio of 10Gbps systems and interfaces:  
|                  | • Seven chassis options that fit your scaling and real estate requirements offering the only complete solution for small to large POPs: backbone or edge.  
|                  | • The only platforms supporting 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.  
|                  | • Proven investment protection with simple, field upgrades to higher switching capacities.  
|                  | • The only complete priority packet delivery solution set—the industry’s only IP QoS implementation that uniquely enables premium real-time IP services such as VoIP and video.  
|                  | • Extensive portfolio of line cards offering leading edge technologies (POS, ATM, DPT/RPR, GbE/FE), support a wide range of networking speeds (from DS1 to OC-192c/STM-64c).  
|                  | • The industry’s only high-end router proven (via independent lab testing) to maintain customer connections and network traffic with zero packet loss despite a route processor failure.                                                                                                                                               | 1-51 |
| Cisco SN 5400 Series Storage Router | Enables direct access to storage systems anywhere on an IP network. Enables SCSI over IP (iSCSI), the first storage implementation based on IP standards.  
|                  | • Cisco SN 5424M integrates DAS (Direct Attached Storage) environments to SAN (Storage Area Networks) for small/medium businesses and enterprise workgroups. This is a full function Fibre Channel switch that adds iSCSI, providing very low price per port networked storage configurations.                                                                                     | 1-55 |

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**Routers at a Glance**
# Cisco Routers Port Matrix

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<th>2600 Series</th>
<th>3600 Series</th>
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## Chapter 1  Routers

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<th>540 Series</th>
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<th>2600 Series</th>
<th>3600 Series</th>
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1. Cisco 3660 only
2. Cisco 3620 and 3640
3. Supported on the 2691 only
4. Requires external power source
# Memory Information for Routers

## Chapter 1 - Routers

### Memory Information for Routers

<table>
<thead>
<tr>
<th>Router</th>
<th>Memory Type</th>
<th>Default Memory Type</th>
<th>Max Memory</th>
<th>Configuration (Notes)</th>
</tr>
</thead>
<tbody>
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<tr>
<td>801, 802, 803, and 804</td>
<td>Flash</td>
<td>8 MB</td>
<td>12 MB</td>
<td>4 MB on board and 4 MB or 8 MB or flash card</td>
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<td>4 MB on board and 4 MB or 8 MB DIMM module</td>
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<td>805</td>
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<td>12 MB</td>
<td>4 MB On board + 4 MB or 8 MB/16 MB Module</td>
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<td>8 MB (on board)</td>
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<td>4 MB On board + 4 MB or 8 MB/16 MB Module</td>
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<td>811 and 813</td>
<td>Flash</td>
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<td>831, 836, 837</td>
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<td>1721</td>
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<td>16 MB</td>
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<td>2620 and 2640</td>
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<td>48 MB</td>
<td>16 MB On board</td>
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## Memory Information for Routers
## Chapter 1  Routers

### Memory Information for Routers

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<th>Memory Type</th>
<th>Slots</th>
<th>Default Memory</th>
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<td>512 MB</td>
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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

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

Competitive Products

- 3Com: OfficeConnect 810
- Alcatel: Speed Touch Pro Router
- Cayman: 3320H
- Efficient: 5891, 5660
- Lucent: CellPipe 50A
- Netopia: R6100, 4533
- Westel: Wirespeed 39R366
- ZyXel: 641, 782
- Aroska: 9M 1352
- Linksys: Etherfast models

Specifications

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<tr>
<th>Feature</th>
<th>SOHO 91</th>
<th>SOHO 96</th>
<th>SOHO 97</th>
<th>SOHO 78</th>
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<td>Fixed LAN Ports</td>
<td>4-port 10/100 Switch</td>
<td>4-port 10/100 Switch</td>
<td>4-port 10/100 Switch</td>
<td>4-port Ethernet (10BASE-T)</td>
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<td>Fixed WAN Ports</td>
<td>1-port Ethernet (connects to external DSL or cable modem)</td>
<td>1-port ADSL over ISDN</td>
<td>1-port ADSL over POTS</td>
<td>1-port G.SHDSL</td>
</tr>
<tr>
<td>Flash Memory</td>
<td>8 MB</td>
<td>8 MB</td>
<td>8 MB</td>
<td>8 MB</td>
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<td>32 MB</td>
<td>16 MB</td>
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<td>Dimensions (HxWxD)</td>
<td>2.9 x 4.7 x 8.5 in.</td>
<td>2.9 x 4.7 x 8.5 in.</td>
<td>2.9 x 4.7 x 8.3 in.</td>
<td>2.9 x 3.9 x 8.3 in. (8.1 x 25.2 x 21.1 cm)</td>
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</tbody>
</table>

For More Information

See the Cisco SOHO Web site: [http://www.cisco.com/go/soho90](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)
- Toll quality voice with VoIP on Cisco 827-4V
- 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

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: M1252
- Zyxel: 782
- Linksys: Etherfast

Specifications

Cisco 801, 802, 803, 804, 805, 811 and 813

<table>
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<tr>
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<th>811</th>
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<tr>
<td>Fixed LAN Port Connections</td>
<td>1-port Ethernet (10BASE-T)</td>
<td>1-port Ethernet (10BASE-T)</td>
<td>4-port Ethernet hub (10BASE-T)</td>
<td>4-port Ethernet hub (10BASE-T)</td>
<td>1-port Ethernet (10BASE-T)</td>
<td>4-port Ethernet hub (10BASE-T)</td>
</tr>
<tr>
<td>Fixed WAN Port Connections</td>
<td>1-port ISDN BRI (S/T)</td>
<td>1-port ISDN BRI (U) NT-1</td>
<td>1-port ISDN BRI (S/T) 2 analog ports</td>
<td>1-port ISDN BRI (U) NT-1 2 analog ports</td>
<td>1-port ISDN BRI S/T and 3-port ISDN BRI (U) NT-1 2 analog ports</td>
<td>1-port ISDN BRI S/T and 3-port ISDN BRI (U) NT-1 2 analog ports</td>
</tr>
<tr>
<td>Flash Memory</td>
<td>8MB (default) 12MB (max)</td>
<td>8MB (default) 12MB (max)</td>
<td>8MB (default) 12MB (max)</td>
<td>8MB (default) 12MB (max)</td>
<td>4MB (default) 12MB (max)</td>
<td>8MB (default) 12MB (max)</td>
</tr>
<tr>
<td>DRAM Memory</td>
<td>4MB (default) 12MB (max)</td>
<td>4MB (default) 12MB (max)</td>
<td>4MB (default) 12MB (max)</td>
<td>4MB (default) 12MB (max)</td>
<td>8MB (default) 16MB (max)</td>
<td>16MB (default) 16MB (max)</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>2.0 x 9.9 x 8.3 in. (5.1 x 25.2 x 21.1 cm)</td>
<td>Same as Cisco 801</td>
<td>Same as Cisco 801</td>
<td>Same as Cisco 801</td>
<td>Same as Cisco 801</td>
<td>Same as Cisco 801</td>
</tr>
</tbody>
</table>
Cisco 800 Series (805, 836, 827-4V, 828, 836, 837)

<table>
<thead>
<tr>
<th>Feature</th>
<th>805</th>
<th>827-4V</th>
<th>828</th>
<th>831</th>
<th>836</th>
<th>837</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fixed LAN Port Connections</strong></td>
<td>1-port Ethernet (10BASE-T)</td>
<td>1-port Ethernet (10BASE-T)</td>
<td>4-port Ethernet hub (10BASE-T)</td>
<td>4-port Ethernet hub (10BASE-T)</td>
<td>1-port Ethernet (10BASE-T)</td>
<td>4-port Ethernet (10BASE-T)</td>
</tr>
<tr>
<td><strong>Fixed WAN Port Connections</strong></td>
<td>1-port serial (up to 512 Kbps)</td>
<td>1-port ADSL</td>
<td>1-port U.S. SHDSL</td>
<td>1-port Ethernet ADSL-over-ISDN, 1-port ISDN S/T</td>
<td>1-port ADSL over POTS</td>
<td></td>
</tr>
<tr>
<td><strong>Flash Memory</strong></td>
<td>4MB (default)</td>
<td>12MB (max)</td>
<td>6MB (default)</td>
<td>16MB (max)</td>
<td>8MB (default)</td>
<td>24MB (max)</td>
</tr>
<tr>
<td><strong>DRAM Memory</strong></td>
<td>16MB (default)</td>
<td>24MB (default)</td>
<td>16MB (default)</td>
<td>32MB (max)</td>
<td>4MB (default)</td>
<td>48MB (max)</td>
</tr>
<tr>
<td><strong>Dimensions (HxWxD)</strong></td>
<td>2.0 x 9.9 x 8.3 in. (5.1 x 25.2 x 21.1 cm)</td>
<td>Same as Cisco 805</td>
<td>Same as Cisco 805</td>
<td>2.0 x 9.7 x 8.5 in.</td>
<td>2.0 x 9.7 x 8.5 in.</td>
<td>2.0 x 9.7 x 8.5 in.</td>
</tr>
</tbody>
</table>

**Selected Part Numbers and Ordering Information**

**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
- CISCO806-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-12.0.7X5= Cisco 800 Series IP/IPX/FW Plus IP/Sec 56
- CD08-BP-12.07.X= Cisco 800 Series IP/IPX/Plus
- CD00-SCAPI= CAPI 5 User CD
- CD08-IC-12.0.5T= Cisco 800 Series Internet DSL
- CD08-IHL-12.0.5T= Cisco 800 Series Internet DSL FW IP/Sec 56
- CD08-IHL-12.0.5T= Cisco 800 Series Internet DSL IFX IP/Sec 56

**Cisco 800 Series Memory Options**

- M EM 800 48= Cisco 800 Series, 4 MB Flash M ini-Card
- M EM 800 8BF= Cisco 800 Series, 8 MB Flash M ini-Card
- M EM 800 4D= Cisco 800 Series, 4 MB DRAM DIM M
- M EM 800 8D= Cisco 800 Series, 8 MB DRAM DIM M
- M EM 820 BU16F= Cisco 820 Flash upgrade 16M byte-10Mbyte
- M EM 820 16U10D= Cisco 820 DRAM upgrade 20M byte-24M byte & 16M byte-32M byte also available
- M EM 820 4U32= Cisco 820 DRAM upgrade to 32 M bytes

**Cisco 800 Series Accessories**

- PWR-Bxx-WW1= Cisco Bxx Series, AC Power Supply Spare

**Cisco 800 Series Basic Maintenance**

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

For More Information

See the Cisco 800 Series Web site: [http://www.cisco.com/go/800](http://www.cisco.com/go/800)
Cisco 1700 Series

The Cisco 1700 series modular access routers are designed to provide a cost-effective integrated access platform for small and medium-sized businesses and enterprise small branch offices. These Cisco IOS-based routers deliver high-speed network access, comprehensive security features, and multiservice data/voice/video/fax integration to meet the most demanding business requirements. Within the Cisco 1700 series, Cisco 1710 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, and Cisco 1751 and Cisco 1760 modular access routers are optimized for both voice and data traffic, providing a simple and cost-effective path to multi-service networking—today or in the future.

When to Sell

Sell This Product | When a Customer Needs These Features
--- | ---
Cisco 1710 | • Advanced routing and security functionality in one device when connecting to the Internet using a broadband modem  
• Hardware-assisted 3DES VPN encryption at full T1/E1 speeds
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, K25, SMDS and more  
• IPSec 3DES VPN encryption at full T1/E1 speeds  
• IEEE 802.1Q VLAN Support
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/VIC and 2 VIC 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 to evolve with the needs of growing businesses
• Integrated Device—Cisco 1700 series combines WAN routing, VPN and multiservice access in a single device
• Expansion Slot—Supports optional hardware VPN module for wire-speed IPSec 3DES encryption and can enable future technologies (VPN Module standard on Cisco 1710)
• Integrated Security—The 1700 series 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
## Specifications

### Cisco 1710, Cisco 1721, Cisco 1751/1751-V, Cisco 1760/1760-V

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco 1710</th>
<th>Cisco 1721</th>
<th>Cisco 1751/1751-V</th>
<th>Cisco 1760/1760-V</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fixed LAN Ports</strong> (connections)</td>
<td>1-port autosensing 10/100 Mbps Ethernet</td>
<td>1-port autosensing 10/100 Mbps Ethernet</td>
<td>1-port autosensing 10/100 Mbps Ethernet</td>
<td>1-port autosensing 10/100 Mbps Ethernet</td>
</tr>
<tr>
<td><strong>Fixed WAN Ports</strong></td>
<td>1-port 10BASE-T Ethernet</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Modular Slots</strong></td>
<td>None</td>
<td>2 WAN slots</td>
<td>3 slots</td>
<td>4 slots (2 WAN or Voice slots and 1 Voice-only slot)</td>
</tr>
<tr>
<td><strong>WAN Interface Card (VIC) Modules</strong></td>
<td>None</td>
<td>See Part Numbers and Ordering Information</td>
<td>See Part Numbers and Ordering Information</td>
<td>See Part Numbers and Ordering Information</td>
</tr>
<tr>
<td><strong>Voice Interface Cards (VIC) Modules</strong></td>
<td>None</td>
<td>None</td>
<td>See Part Numbers and Ordering Information</td>
<td>See Part Numbers and Ordering Information</td>
</tr>
<tr>
<td><strong>Flash Memory</strong></td>
<td>16 MB (Flash) (default); 16 MB (max)</td>
<td>1751 base model: 16 MB</td>
<td>1751-V multiservice-ready configuration: 32 MB (default); 32 MB (max)</td>
<td>1760 base model: 32 MB; 64 MB (max)</td>
</tr>
<tr>
<td><strong>DRAM Memory</strong></td>
<td>8 MB (default); 96 MB (max)</td>
<td>1751 base model: 32 MB</td>
<td>1751-V multiservice-ready configuration: 64 MB (default); 96 MB (max)</td>
<td>1760 base model: 32 MB; 64 MB (max)</td>
</tr>
<tr>
<td><strong>Dimensions (HxWxD)</strong></td>
<td>3.1 x 11.2 x 8.7 in.</td>
<td>3.1 x 11.2 x 8.7 in.</td>
<td>4.0 x 11.2 x 8.7 in.</td>
<td>1.7 x 13.5 x 12.8 in.</td>
</tr>
</tbody>
</table>

### Cisco IOS Software and Memory Requirements

<table>
<thead>
<tr>
<th>Distribution Part Number</th>
<th>Feature Pack Description</th>
<th>IOS Image Release</th>
<th>Flash Memory Required</th>
<th>DRAM Memory Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD17-C-12.x</td>
<td>IP only</td>
<td>12.1 Mainline</td>
<td>4 MB</td>
<td>16 MB</td>
</tr>
<tr>
<td>CD17-CH-12.x</td>
<td>IP/FW</td>
<td>12.1 Mainline</td>
<td>4 MB</td>
<td>20 MB</td>
</tr>
<tr>
<td>CD17-CF-12.x</td>
<td>IP Plus</td>
<td>12.1 Mainline</td>
<td>4 MB</td>
<td>20 MB</td>
</tr>
<tr>
<td>CD17-CHK2-12.x</td>
<td>IP/FW Plus IPSEC 3DES</td>
<td>12.1 Mainline</td>
<td>8 MB</td>
<td>32 MB</td>
</tr>
<tr>
<td>CD17-CVP-12.x</td>
<td>IP/Voice Plus</td>
<td>12.1 Mainline</td>
<td>8 MB</td>
<td>24 MB</td>
</tr>
<tr>
<td>CD17-CHV-12.x</td>
<td>IP/FW/Voice Plus</td>
<td>12.1 Mainline</td>
<td>8 MB</td>
<td>24 MB</td>
</tr>
<tr>
<td>CD17-CHV2-12.x</td>
<td>IP/FW/Voice Plus IPSEC 3DES</td>
<td>12.1 Mainline</td>
<td>8 MB</td>
<td>32 MB</td>
</tr>
<tr>
<td>CD17-C-12.x</td>
<td>IP only</td>
<td>12.1T</td>
<td>4 MB</td>
<td>16 MB</td>
</tr>
<tr>
<td>CD17-CH-12.x</td>
<td>IP/FW</td>
<td>12.1T</td>
<td>4 MB</td>
<td>20 MB</td>
</tr>
<tr>
<td>CD17-CF-12.x</td>
<td>IP Plus</td>
<td>12.1T</td>
<td>4 MB</td>
<td>20 MB</td>
</tr>
<tr>
<td>CD17-CHK2-12.x</td>
<td>IP/FW Plus IPSEC 3DES</td>
<td>12.1T</td>
<td>8 MB</td>
<td>32 MB</td>
</tr>
<tr>
<td>CD17-CVP-12.x</td>
<td>IP/Voice Plus</td>
<td>12.1T</td>
<td>8 MB</td>
<td>32 MB</td>
</tr>
<tr>
<td>CD17-CHV-12.x</td>
<td>IP/FW/Voice Plus</td>
<td>12.1T</td>
<td>8 MB</td>
<td>32 MB</td>
</tr>
<tr>
<td>CD17-CHV2-12.x</td>
<td>IP/FW/Voice Plus IPSEC 3DES</td>
<td>12.1T</td>
<td>8 MB</td>
<td>32 MB</td>
</tr>
</tbody>
</table>

### Cisco 1700 Series Modular Access Routers

- **CISCO1760**: 10/100 Modular Router w/ 2 VIC/VIC2 VIC slots, 19 inch Chassis
- **CISCO1760-ADSL**: 10/100 BaseT Modular Router w/ADSL WIC, IP/ADSL
- **CISCO1760-SHDSL**: 10/100 BaseT Modular G.SHDSL Router, 19 inch Chassis
- **CISCO1760-VoP/K9**: 1700 VPN Bundle w/ VPN Module, 48 MB DRAM, IP, IP/ADSL
- **CISCO1760-VoP/K9-A**: 1700 VPN Bun. w/ADSL WIC, VPN Module, 48 MB DRAM, IP, IP/FW/3DES
- **CISCO1760-VoP/K9-A**: 1700 VPN Bun. w/ADSL WIC, VPN Module, 48 MB DRAM, IP, IP/FW/3DES
- **CISCO1721**: 10/100 Modular Router w/Voice, IOS IP/VOICE Plus, 32F/64D
- **CISCO1721-VoP/K9**: 1751 VPN Bundle w/ VPN Module, 48 MB DRAM, IP, IP/FW/3DES

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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
Chapter 1 Routers

Cisco 1700 Series

CISCO1721 10/100 BaseT Modular Router w/ 2 WAN slots, 16M Flash/32M DRAM
CISCO1721-VPN/K9 1721 VPN Bundle w/ VPN Module, 48M DRAM, IP Plus/FW/3DES
CISCO1721-VPN/K9-A 1721 VPN Bun. w/ ADSL, WIC, VPN Module, 48M DRAM, IP + FW/3DES
CISCO1721-SHDSL 10/100 BaseT Modular G.SHDSL Router, IP/DSL
CISCO1721-VPN-M/K9 Dual Ethernet Security Access Router, VPN Module, IP/3DES/FW

Cisco 1751 Software Feature Packs for Cisco IOS Release 12.1(SYB)
CD7-C-12.1.S= IP
CD7-C-12.1.S= IP ADSL
CD7-C-12.1.S= IP Plus ADSL
CD7-C-12.1.S= IP Plus IPSec 3DES ADSL
CD7-C-12.1.S= IP/FW/IDS
CD7-B-12.1.S= IP/IPS
CD7-C-12.1.S= IP/FW/3DES Plus ADSL
CD7-C-12.1.S= IP/FW/3DES Plus IPSec 3DES ADSL
CD7-C-12.1.S= IP/IPX/AT/IBM/FW/3DES Plus IPSec 3DES
CD7-C-12.1.S= IP/IPS
CD7-C-12.1.S= IP/FW/3DES Plus ADSL
CD7-C-12.1.S= IP/FW/3DES Plus IPSec 3DES

Cisco 1750 Series Memory Options
MEM-1700-4MFC= Cisco 1700 Series, 4 M B M mini-Flash Card
MEM-1700-8MFC= Cisco 1700 Series, 8 M B M mini-Flash Card
MEM-1730-64D= Cisco 1700 Series, 64 M B DRAM DIMM
MEM-1760-32D= Cisco 1700 Series, 32 M B DRAM DIMM
MEM-1760-64D+ Cisco 1700 Series, 64 M B DRAM DIMM

Cisco 1750 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-2B/S/T 1-port BRI (S/T) WAN Interface Card (dial and leased line)
WIC-2B 1-port BRI w/ NT-I WAN Interface Card (dial and leased line)
WIC-2DSU-56K4 1-port 4-Wire 56/64 Kbps w/ (DSU/CSU) WAN Interface Card
WIC-2DSU-T1 1-port T1/Fr T1 w/ (DSU/CSU) WAN Interface Card
WIC-2ADS= 1-port ADSL WAN Interface Card
WIC-2SHDSL 1-port G.SHDSL WAN Interface Card
WIC-2ENET= 1-port Ethernet 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-2FXD 2-port Voice Interface Card FXD
VIC-2E/M 2-port Voice Interface Card E&M
VIC-2FXD-EU 2-port Voice Interface Card FXD for Europe
VIC-2FXD-M 32-port Voice Interface Card FXD for Australia
VIC-2BRI-NT/TE 2-port Voice Interface Card—BRI (NT & TE)
VIC-2FXD-M1 2-port FXD for U.S. with battery reversal
VIC-2FXD-M2 2-port FXD for Europe with battery reversal
VIC-2DID 2-port FXD analog DID

Cisco 1720 Series Multiplex Voice / WAN Interface Cards
WWIC-1MF-FT-E1 1-Port RJ-48 M multiflex Trunk - E1
WWIC-1MF-FT-E1= 1-Port RJ-48 M multiflex Trunk - E1
WWIC-1MF-FT-G703 1-Port RJ-48 M multiflex Trunk - G.703
WWIC-1MF-FT-G703= 1-Port RJ-48 M multiflex Trunk - G.703
WWIC-2MF-FT-E1 2-Port RJ-48 M multiflex Trunk - E1
WWIC-2MF-FT-E1= 2-Port RJ-48 M multiflex Trunk - E1
WWIC-2MF-FT-DI 2-Port RJ-48 M multiflex Trunk - E1 With Drop and Insert
WWIC-2MF-FT-DI= 2-Port RJ-48 M multiflex Trunk - E1 With Drop and Insert
WWIC-2MF-FT-G703 2-Port RJ-48 M multiflex Trunk - G.703
WWIC-2MF-FT-G703= 2-Port RJ-48 M multiflex Trunk - G.703
WWIC-1MF-FT-T1 1-Port RJ-48 M multiflex Trunk - T1
WWIC-1MF-FT-T1= 1-Port RJ-48 M multiflex Trunk - T1
WWIC-2MF-FT-T1 2-Port RJ-48 M multiflex Trunk - T1
WWIC-2MF-FT-T1= 2-Port RJ-48 M multiflex Trunk - T1
WWIC-2MF-FT-T1-DI 2-Port RJ-48 M multiflex Trunk - T1 With Drop and Insert
WWIC-2MF-FT-T1-DI= 2-Port RJ-48 M multiflex Trunk - T1 With Drop and Insert
WWIC-2MF-FT-T1 2-Port RJ-48 M multiflex Trunk - T1
WWIC-2MF-FT-T1= 2-Port RJ-48 M multiflex Trunk - T1.
Cisco 2500 Series

The Cisco 2500 series router has served for years as the most deployed and popular branch office router in the world, and provides low cost routing functionality for data-only applications (no voice support). There are currently two access servers to choose from, 8 or 16 asynchronous ports, each with 1 Ethernet port, for aggregating multiple network elements to provide a single Telnet access point (telemetry application)—or for attaching 8 to 16 external analog or digital modems in environments where T1/E1 digital circuits are not available, but multiple dial-up telephone lines can be leveraged for low cost remote access.

For higher performance requirements, where a wider variety of WAN/LAN interfaces are needed, as well as voice support, refer to Cisco 2600/2600XM/3600 or 1700 series routers.

When to Sell

Sell This Product When a Customer Needs These Features

Cisco AS2509-RJ and AS2511-RJ

- Data-only network requirement
- An access server combining a terminal server, protocol translator, console port aggregator, and a router in a single device
- One Ethernet LAN and dual serial ports
- 8 or 16 asynchronous serial ports with RJ-11 jacks, ideal for attaching 8 to 16 external modems

Key Features

- Proven technology with a full suite of Cisco IOS Software
- Setup with Cisco ConfigMaker, a free tool for configuring a network of routers
- With CiscoWorks for Windows, allows remote management and maintenance from a central location
Cisco 2500 Series
Chapter 1  Routers

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco AS2509-RJ</th>
<th>Cisco AS2511-RJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throughput Performance (pps)</td>
<td>3-5 Kpps (depending on configuration)</td>
<td>3-5 Kpps (depending on configuration)</td>
</tr>
<tr>
<td>Memory</td>
<td>8-MB dual Flash bank option (default)</td>
<td>Same as Cisco AS2509-RJ</td>
</tr>
<tr>
<td></td>
<td>16-MB DRAM (max)</td>
<td>Same as Cisco AS2509-RJ</td>
</tr>
<tr>
<td></td>
<td>16-MB DRAM (default)</td>
<td>Same as Cisco AS2509-RJ</td>
</tr>
<tr>
<td>Power Supply</td>
<td>A.C. with optional DC or redundant power supply</td>
<td>Same as Cisco AS2509-RJ</td>
</tr>
<tr>
<td>Fixed LAN Ports</td>
<td>1-port Ethernet</td>
<td>1-port Ethernet</td>
</tr>
<tr>
<td>Fixed WAN Ports</td>
<td>1-port sync serial</td>
<td>1-port sync serial</td>
</tr>
<tr>
<td></td>
<td>8-port async</td>
<td>16-port async</td>
</tr>
<tr>
<td>Dimensions (H x W x D)</td>
<td>1.75 x 17.5 x 10.56 in.</td>
<td>1.75 x 17.5 x 10.56 in.</td>
</tr>
</tbody>
</table>

Cisco IOS Software and Memory Requirements

To run the Cisco IOS software Feature Packs, you need the amount of memory shown in the following table:

<table>
<thead>
<tr>
<th>Distribution Part Number</th>
<th>Feature Pack Description</th>
<th>IOS Image Release</th>
<th>Flash Memory Required</th>
<th>DRAM Memory Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD25-C-12.0=</td>
<td>IP only</td>
<td>12.0(3)T</td>
<td>8 MB</td>
<td>4 MB</td>
</tr>
<tr>
<td>CD25-CP-12.0=</td>
<td>IP Plus</td>
<td>12.0(3)T</td>
<td>8 MB</td>
<td>6 MB</td>
</tr>
<tr>
<td>CD25-CHEL-12.0=</td>
<td>IP/FW Plus IPSEC 56</td>
<td>12.0(3)T</td>
<td>16 MB</td>
<td>8 MB</td>
</tr>
<tr>
<td>CD25-B-12.0=</td>
<td>IP/IPX/AT/DEC</td>
<td>12.0(3)T</td>
<td>8 MB</td>
<td>6 MB</td>
</tr>
<tr>
<td>CD25-BP-12.0=</td>
<td>IP/IPX/AT/DEC Plus</td>
<td>12.0(3)T</td>
<td>16 MB</td>
<td>8 MB</td>
</tr>
<tr>
<td>CD25-AP-12.0=</td>
<td>Enterprise-Plus</td>
<td>12.0(3)T</td>
<td>16 MB</td>
<td>10 MB</td>
</tr>
</tbody>
</table>

1. For users with CCO access, search by IOS feature or release via the Feature Navigator at http://www.cisco.com/go/fn
2. Bold numbers indicate that more memory than the default amount is needed to run the Feature Pack.

Selected Part Numbers and Ordering Information

Cisco 2500 Series Access Router Chassis

CISCO2509-CH 1-port Ethernet AUI, 2-port Serial, 8-port Async Serial, IP s/w
AS2509-RJ-CH 1-port Ethernet AUI (RJ-45), 1-port Serial, 8-port Async Serial, IP s/w
CISCO2511-CH 1-port Ethernet AUI, 2-port Serial, 16-port Async Serial, IP s/w
AS2511-RJ-CH 1-port Ethernet AUI (RJ-45), 1-port Serial, 16-port Async Serial, IP s/w

Cisco 2500 Series Memory Options

MEM-1X4F= Cisco 2500 Series, 4 MB Flash Upgrade
MEM-1X8F= Cisco 2500 Series, 8 MB Flash Upgrade
MEM-1X8D= Cisco 2500 Series, 8 MB DRAM Upgrade
MEM-1X16D= Cisco 2500 Series, 16 MB DRAM Upgrade

Cisco 2500 Series Accessories

ACS-2500RM-19= Cisco 2500 Series Rack Mount Kit, 19 Inches
ACS-2500RM-24= Cisco 2500 Series Rack Mount Kit, 24 Inches
ACS-2500AUX= Cisco 2500 AUX/Console Port Cable Kit
ACS-2500PS= Cisco 2500 Series, RPS Field Upgrade

Cisco 2500 Series Basic Maintenance

CON-5NT-PKG4 Packaged SMARTnet (8 x 5 x NBD) for the Cisco AS2509 and AS2511

For More Information

See the Cisco 2500 Series Web site: http://www.cisco.com/go/2500
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. This range of features make the Cisco 2600 series the ideal branch-office router for today’s and tomorrow’s customer requirements.

The Cisco 2600 series family of modular routers include the Cisco 2600XM models, the Cisco 2691 and the Cisco 2612 token ring router. These new 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.

The highest performing router in the Cisco 2600 family that extends the density of emerging branch office applications, is the Cisco 2691 offering almost twice the performance of the Cisco 2650XM platform while leveraging the same modules from other Cisco 2600, Cisco 3600 and Cisco 3700 Series routers. Compared to the Cisco 2600XM models, the new Cisco 2691 is designed to offer a higher degree of versatility, providing greater throughput for higher density WAN applications, support for high speed interfaces and increased performance to handle new services.

When to Sell

Sell This Product When a Customer Needs These Features

**Cisco 2691**
- Enterprises wanting a higher level of performance for a broadened 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
- High performance Dual 10/100 Modular Router with Cisco IOS IP
- High performance 10/100 Modular Router with Cisco IOS IP
- High performance Dual 10/100 Ethernet Router with Cisco IOS IP
- High performance 10/100 Ethernet Router with Cisco IOS IP
- Dual 10/100 Ethernet Router with Cisco IOS IP
- 10/100 Ethernet Router with Cisco IOS IP
- 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, multiplexors, 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
Chapter 1  Routers

• 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 Layer 2 (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 Virtual Private Network modules (VPN) optimize the Cisco 2600 Series platforms for virtual private networks (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 voice over IP (VoIP)

Competitive Products

- 3Com: SuperStack II NETBuilder S1 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

<table>
<thead>
<tr>
<th>Feature</th>
<th>2610/11XM</th>
<th>2620/21XM</th>
<th>2650/51XM</th>
<th>2691</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td>Up to 20Kpps</td>
<td>Up to 30Kpps</td>
<td>Up to 40Kpps</td>
<td>Up to 70Kpps</td>
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<tr>
<td>Flash Memory (Default/Max)</td>
<td>16M B/48MB B</td>
<td>16M B/48MB B</td>
<td>16M B/48MB B</td>
<td>24M B/128MB B (Compact Flash)</td>
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<tr>
<td>System Memory (Default/Max)</td>
<td>32M B/128MB B</td>
<td>32M B/128MB B</td>
<td>64M B/128MB B</td>
<td>64M B/256MB B</td>
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<tr>
<td>Integrated WIC Slots</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
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<tr>
<td>Onboard AIM Slot</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
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<tr>
<td>Minimum Cisco IOS Release</td>
<td>12.2(14) mainline, 12.1(4) mainline, 12.2(12) mainline, 12.2(8)T1 or later</td>
<td>12.2(14) mainline, 12.2(12) mainline, 12.2(8)T1 or later</td>
<td>12.2(14) mainline, 12.2(12) mainline, 12.2(8)T1 or later</td>
<td>12.2(8)T1 or later</td>
</tr>
<tr>
<td>Onboard LAN Ports</td>
<td>1 to 2 10/100 FE ports</td>
<td>1 to 2 10/100 FE ports</td>
<td>1 to 2 10/100 FE ports</td>
<td>2 10/100 FE ports</td>
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<tr>
<td>Rack Mounting</td>
<td>Yes, 19&quot; and 23&quot; options</td>
<td>Yes, 19&quot; and 23&quot; options</td>
<td>Yes, 19&quot; and 23&quot; options</td>
<td>Yes, 19&quot; and 23&quot; options</td>
</tr>
<tr>
<td>Wall Mounting</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
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</table>
Cisco IOS Software and Memory Requirements

Most Cisco IOS software CD feature packs for the Cisco 2600 series include several selected Cisco IOS releases. To run the latest Cisco IOS Software Feature Packs with version 12.0(7)XK, you need, at a minimum, the amount of memory shown in the following table. Some configurations will require more than the recommended minimum.

<table>
<thead>
<tr>
<th>Distribution</th>
<th>Part Number</th>
<th>Feature Pack Description</th>
<th>IOS Image Release</th>
<th>Flash Memory Required</th>
<th>DRAM Memory Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco 2612</td>
<td>CD26-C-12.0.7=</td>
<td>IP only</td>
<td>12.0(7)XK1</td>
<td>8 MB</td>
<td>24 MB</td>
</tr>
<tr>
<td></td>
<td>CD26-CP-12.0.7=</td>
<td>IP Plus</td>
<td>12.0(7)XK1</td>
<td>8 MB</td>
<td>40 MB</td>
</tr>
<tr>
<td></td>
<td>CD26-CH-12.0.7=</td>
<td>IP/Firewall</td>
<td>12.0(7)XK1</td>
<td>8 MB</td>
<td>32 MB</td>
</tr>
<tr>
<td></td>
<td>CD26-CHL-12.0.7=</td>
<td>IP/Firewall Plus IPSec</td>
<td>12.0(7)XK1</td>
<td>16 MB</td>
<td>48 MB</td>
</tr>
<tr>
<td></td>
<td>CD26-CHL-12.0.7=</td>
<td>IP/Firewall Plus IPSec 3DES</td>
<td>12.0(7)XK1</td>
<td>16 MB</td>
<td>48 MB</td>
</tr>
<tr>
<td></td>
<td>CD26-CL-12.0.7=</td>
<td>IP Plus IPSec 56</td>
<td>12.0(7)XK1</td>
<td>16 MB</td>
<td>40 MB</td>
</tr>
<tr>
<td></td>
<td>CD26-B-12.0.7=</td>
<td>IP/IPX/AT/DEC</td>
<td>12.0(7)XK1</td>
<td>8 MB</td>
<td>32 MB</td>
</tr>
<tr>
<td></td>
<td>CD26-BP-12.0.7=</td>
<td>IP/IPX/AT/DEC Plus</td>
<td>12.0(7)XK1</td>
<td>16 MB</td>
<td>40 MB</td>
</tr>
<tr>
<td></td>
<td>CD26-BHP-12.0.7=</td>
<td>IP/IPX/AT/DEC/Firewall Plus</td>
<td>12.0(7)XK1</td>
<td>16 MB</td>
<td>48 MB</td>
</tr>
<tr>
<td></td>
<td>CD26-AP-12.0.7=</td>
<td>Enterprise Plus</td>
<td>12.0(7)XK1</td>
<td>16 MB</td>
<td>48 MB</td>
</tr>
<tr>
<td></td>
<td>CD26-AHK2-12.0.7=</td>
<td>Enterprise/Firewall Plus IPSec 3DES</td>
<td>12.0(7)XK1</td>
<td>16 MB</td>
<td>48 MB</td>
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<tr>
<td></td>
<td>CD26-AHL-12.0.7=</td>
<td>Enterprise/Firewall Plus IPSec 56</td>
<td>12.0(7)XK1</td>
<td>16 MB</td>
<td>48 MB</td>
</tr>
<tr>
<td></td>
<td>CD26-AK2-12.0.7=</td>
<td>Enterprise Plus IPSec 3DES</td>
<td>12.0(7)XK1</td>
<td>16 MB</td>
<td>48 MB</td>
</tr>
<tr>
<td></td>
<td>CD26-E-12.0.7=</td>
<td>Remote Access Server</td>
<td>12.0(7)XK1</td>
<td>6 MB</td>
<td>24 MB</td>
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</table>

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

Cisco 2600/2600XM Series Router Chassis

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CISCO2610XM</td>
<td>10/100 Ethernet Router w/ Cisco IOS IP</td>
</tr>
<tr>
<td>CISCO2610XM-DC</td>
<td>10/100 Ethernet Router w/ Cisco IOS IP - DC</td>
</tr>
<tr>
<td>CISCO2610XM-RPS</td>
<td>10/100 Ethernet Router w/ Cisco IOS IP - use w/ ext RPS</td>
</tr>
<tr>
<td>CISCO2611XM</td>
<td>Dual 10/100 Ethernet Router w/ Cisco IOS IP</td>
</tr>
<tr>
<td>CISCO2611XM-DC</td>
<td>Dual 10/100 Ethernet Router w/ Cisco IOS IP - DC</td>
</tr>
<tr>
<td>CISCO2611XM-RPS</td>
<td>Dual 10/100 Ethernet Router w/ Cisco IOS IP - use w/ ext RPS</td>
</tr>
<tr>
<td>CISCO2620XM</td>
<td>Md Performance 10/100 Ethernet Router w/ Cisco IOS IP</td>
</tr>
<tr>
<td>CISCO2620XM-DC</td>
<td>Md Performance 10/100 Ethernet Router w/ Cisco IOS IP - DC</td>
</tr>
<tr>
<td>CISCO2620XM-RPS</td>
<td>Md Performance 10/100 Ethernet Router w/ Cisco IOS IP - use w/ ext RPS</td>
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<tr>
<td>CISCO2621XM</td>
<td>Md Performance Dual 10/100 Ethernet Router w/ Cisco IOS IP</td>
</tr>
<tr>
<td>CISCO2621XM-DC</td>
<td>Md Performance Dual 10/100 Ethernet Router w/ Cisco IOS IP - DC</td>
</tr>
<tr>
<td>CISCO2621XM-RPS</td>
<td>Md Performance Dual 10/100 Ethernet Router w/ Cisco IOS IP - use w/ ext RPS</td>
</tr>
<tr>
<td>CISCO2650XM</td>
<td>High Performance 10/100 Modular Router w/ Cisco IOS IP</td>
</tr>
<tr>
<td>CISCO2650XM-DC</td>
<td>High Performance 10/100 Modular Router w/ Cisco IOS IP - DC NEBs</td>
</tr>
<tr>
<td>CISCO2650XM-RPS</td>
<td>High Performance 10/100 Modular Router w/ Cisco IOS IP - use w/ ext RPS</td>
</tr>
<tr>
<td>CISCO2651XM</td>
<td>High Performance Dual 10/100 Modular Rout w/ IP-DC-NEB</td>
</tr>
<tr>
<td>CISCO2651XM-DC</td>
<td>High Performance Dual 10/100 Modular Rout w/ IP-DC-NEB</td>
</tr>
<tr>
<td>CISCO2651XM-RPS</td>
<td>High Performance Dual 10/100 Modular Rout w/ IP-DC-NEB</td>
</tr>
<tr>
<td>CISCO2651XM-RPS ADPT</td>
<td>High Performance Dual 10/100 Modular Rout w/ IP-DC-NEB</td>
</tr>
<tr>
<td>CISCO2691</td>
<td>High Performance Dual 10/100 Dual ETH Router w/ 3 WIC Slots, 1 NM</td>
</tr>
<tr>
<td>CISCO2691</td>
<td>1-port 10BASE-T, 1-port TR, 1 network module slot, 1 AIM slot, 2 WIC slots, IP s/w</td>
</tr>
<tr>
<td>CISCO2691</td>
<td>1-port 10BASE-T, 1-port TR, 1 network module slot, 1 AIM slot, 2 WIC slots, DC Power Supply, IP s/w</td>
</tr>
<tr>
<td>CISCO2691</td>
<td>1-port 10BASE-T, 1-port TR, 1 network module slot, 1 AIM slot, 2 WIC slots, RPS adapter, IP s/w</td>
</tr>
</tbody>
</table>

Cisco 2600 Series Voice Gateway Bundles

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CISCO2651XM-V</td>
<td>CISCO2651XM, AIM-VOICE-30, IOS IP Plus, 96D/32F</td>
</tr>
<tr>
<td>CISCO2651XM-V-SRST</td>
<td>CISCO2651XM, FL-SRST-MEDIUM, AIM-VOICE-30, IOS IP Plus, 96D/32F</td>
</tr>
</tbody>
</table>
Cisco 2600 Series Routers

Cisco 2600 Series VPN Bundles

CVVPN2600FIPS KIT= KIT (Instructions, labels) to configured 2600 for FIPS

C2651XM-2FE/VPN/K9 2651XM/VPN Bundle, AIM-VPN/EP/2FE/IOS FW/IPsec 3 DES, 96DRAM

C2621XM-2FE/VPN/K9 2621XM/VPN Bundle, AIM-VPN/EP/2FE/IOS FW/IPsec 3 DES, 96DRAM

C2611XM-2FE/VPN/K9 2611XM/VPN Bundle, AIM-VPN/EP/2FE/IOS FW/IPsec 3 DES, 96DRAM


Cisco 2600 Series DSL Bundles

CISCO2651XM-ADSL 2651XM-ADSL Bundle, WI C-1ADSL, 2FE, IP Plus, 32F/96DRAM

CISCO2621XM-ADSL 2621XM-ADSL Bundle, WI C-1ADSL, 2FE, IP Plus, 32F/96DRAM

CISCO2611XM-ADSL 2611XM-ADSL Bundle, WI C-1ADSL, 2FE, IP Plus, 32F/96DRAM

CISCO2651XM-SHDSL 2651XM-SHDSL Bundle, WI C-1SHDSL, 2FE, IP Plus, 32F/96DRAM

CISCO2621XM-SHDSL 2621XM-SHDSL Bundle, WI C-1SHDSL, 2FE, IP Plus, 32F/96DRAM

Cisco 2600/2600XM Series LAN Modules

NM-3E= 1-port 10BASE-T network module

NM-4E= 4-port 10BASE-T network module

Cisco 2600/2600XM and 3600 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-56k= 1-port Serial W/ 56k DSU/CSU WAN Interface Card

WIC-1DSU-T1= 1-port Serial w/ T1 DSU/CSU 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 SHDSL WAN Interface Card

WIC-JA= 1-port Analog Modem WAN Interface Card

WIC-JA= 2-port Analog Modem WAN Interface Card

Cisco 2600/2600XM and 3600 Series Multiflex Voice and WAN Interface Cards

VWIC-1MFT-T1= 1-port RJ-48 Multiflex Trunk-T1

VWIC-1MFT-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-E1-DI= 2-port RJ-48 Multiflex Trunk—E1 With Drop and Insert

Cisco 2600/2600XM and 3600 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-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-1T1-48= 2-port T1 48 channel voice/fax network module

NM-HDV-30E= 1-port E1 30 enhanced channel voice/fax network module

NM-HDV-60E= 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

Cisco 2600/2600XM and 3600 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

Cisco 2600/2600XM and 3600 Series EtherSwitch Modules

NM-16ESW = Sixteen 10baseT/100baseTX autosensing ports EtherSwitch

NM-32ESW = Sixteen 10baseT/100baseTX autosensing ports EtherSwitch with power daughter card

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

PVDM-12= 12-channel Packet Voice/Fax DSP Module
Cisco 2600/2600XM and 3600 Series Voice Interface Cards (VICs)

- VIC-2EM = 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-2TXO-M1 = 2-port Voice Interface Card—FXO w/ Reversal (for US+)
- VIC-2TXO-M2 = 2-port Voice Interface Card—FXO w/ Reversal (for EU)

Cisco 2600/2600XM and 3600 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 = 8-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 2600/2600XM and 3600 Series Modem Network Modules

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

Cisco 2600/2600XM and 3600 Series Network Modules (International)

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

Cisco 2600/2600XM and 3600 Series Modem Management Technology Licenses (MMTL) 3

- MMTL-3600/2600-8 = MMTL for 8 Analog Modems
- MMTL-3600/2600-16 = MMTL for 16 Analog Modems

Cisco 2600/2600XM and 3600 Series Advanced Integration Modules

- AIM-COMPR2 = Data Compression AIM for the Cisco 2600/2600XM series
- AIM-VPN/BP = DES/3DES VPN Encryption AIM for 2600-Base Performance
- AIM-ATM = ATM SAR Only AIM
- AIM-ATM-1T1 = High Performance ATM AIM/T1 Bundle AIM-ATM
- AIM-ATM-EL = High Performance ATM AIM/E1 Bundle AIM-ATM
- AIM-VPN/E = DES/3DES VPN Encryption Module for 2600 Enhanced Performance
- AIM-VPN/EP = DES/3DES/AES VPN Encryption Module for 2691U3725
- AIM-VOICE-30 = 30-Channel T1/E1 Digital Voice Module
- AIM-VOICE-30 = 30-Channel T1/E1 Digital Voice Module

Cisco 2600/2600XM 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 2600/2600XM Series Factory DRAM Memory Upgrades

- MEM2600-32U40D 32 to 40-MB DRAM Factory Upgrade for the Cisco 2600 Series
- MEM2600-32U48D 32 to 48-MB DRAM Factory Upgrade for the Cisco 2600 Series
- MEM2600-32U64D 32 to 64-MB DRAM Factory Upgrade for the Cisco 2600 Series
- MEM2600-32U96D 32 to 96-MB DRAM Factory Upgrade for the Cisco 2600 Series
- MEM2600-64U128D 64 to 128-MB DRAM Factory Upgrade for 265xXM/VPN Bundles
- MEM2600-64U96D 64 to 96-MB DRAM Factory Upgrade - 265sx/XM/V1280/V1920

Cisco 2600 Series Line Cards

- ECE1B = 1-port Channelized E1/ISDN-PRI balanced network module
- ECE1U = 1-port Channelized E1/ISDN-PRI unbalanced network module
- ECT1 = 1-port Channelized T1/ISDN-PRI network module
- ECT1-CSU = 1-port Channelized T1/ISDN-PRI w/ CSU network module
- ECT1-CSU = 1-port Channelized T1/ISDN-PRI w/ CSU network module
### Cisco 2600/2600XM Series Factory Flash Memory Upgrades

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEM2691-64U256D</td>
<td>64 to 256MB DRAM factory upgrade for the Cisco 2691</td>
</tr>
<tr>
<td>MEM2691-128U512D</td>
<td>128MB DRAM factory upgrade for NM-CE-BP</td>
</tr>
</tbody>
</table>

### Cisco 2600/2600XM Series Memory Spares

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEM2600-8D=</td>
<td>8 MB DRAM DIMM for the Cisco 2600 Series</td>
</tr>
<tr>
<td>MEM2600-16D=</td>
<td>16 MB DRAM DIMM for the Cisco 2600 Series</td>
</tr>
<tr>
<td>MEM2600-32D=</td>
<td>32 MB DRAM DIMM for the Cisco 2600 Series</td>
</tr>
<tr>
<td>MEM2691-128D=</td>
<td>128MB DIMM DRAM for the Cisco 2691</td>
</tr>
</tbody>
</table>

### Cisco 2600/2600XM Series Power Supplies and Other

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWR-2600-AC=</td>
<td>Cisco 2600/2600XM AC power supply spare</td>
</tr>
<tr>
<td>PWR-2600-DC=</td>
<td>Cisco 2600/2600XM DC power supply spare</td>
</tr>
</tbody>
</table>

### Cisco 2691 Series Network Modules

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NM-1GE=</td>
<td>1 Port GE Network Module</td>
</tr>
<tr>
<td>NM-1T3/E3=</td>
<td>One port T3/E3 network module</td>
</tr>
</tbody>
</table>

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

3. Requires Plus feature pack

**For More Information**

See the Cisco 2600 Series Web site: [http://www.cisco.com/go/2600](http://www.cisco.com/go/2600)
Cisco 3600 Series

The Cisco 3600 Series is a family of modular, high-performance multiservice access routers for medium and large-sized branch offices and Internet service providers. With over 100 modular interface options (shares modular interfaces with the 2600/2600XM series), the Cisco 3600 Series provides solutions for voice/data integration, virtual private networks (VPNs), dial access, and multiprotocol data routing. Using Cisco’s digital and analog voice/fax network modules, the Cisco 3600 Series allows customers to consolidate voice, fax, and data traffic on a single network. Its architecture protects customers’ investment in network technology and integrates the functions of several devices into a single, manageable solution. Cisco 3600 VPN and Dial Bundles are also available to also address specific VPN/security, and dial-up remote access server requirements. Customers are encouraged to migrate to the Cisco 3700 Series.

When to Sell

Sell This Product When a Customer Needs These Features

Cisco 3620
- Medium-density WAN and dialup connectivity
- Medium-density LAN connectivity
- Low-density Voice over Data
- Low-density ATM connections
- Mid-density modem-over-PRI bundles

Cisco 3640A
- High-density WAN and dialup connectivity
- Medium- to high-density LAN connectivity
- Mid-density Voice over Data
- Low- to mid-density ATM connections
- Low-density modem-over-BRI bundles
- Configurations not available on the Cisco 3700

Cisco 3660
- Very high-density WAN and dialup connectivity
- High-density LAN connectivity
- Mid-density Voice over Data
- Mid-density ATM connections
- Mid- to high-density modem-over-PRI and BRI connectivity

Key Features

- Combines dial access, advanced LAN-to-LAN routing services, ATM connectivity, and multiservice integration of voice, video, and data in a single platform
- Modular, scalable design provides performance, scalability, flexibility, and investment protection
- High-density ISDN PRI capabilities
- Preconfigured BRI and PRI modem bundles available
- Support for modem-over-BRI functionality
- Integrated Cisco IOS software (base price includes IP IOS software)
- Full VPN and Firewall support
- ADSL and G.SHDSL support
- ISDN Modem backup
Chapter 1  Routers

Specifications

To run the Cisco IOS Feature Packs, you need the following amount of memory:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco 3620</th>
<th>Cisco 3640</th>
<th>Cisco 3660</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Ports</td>
<td>None</td>
<td>None</td>
<td>1 or 2 10/100 Fast Ethernet</td>
</tr>
<tr>
<td>Network Module Slots</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Advanced Integration Module (AIM) Slots</td>
<td>None</td>
<td>None</td>
<td>2</td>
</tr>
<tr>
<td>LAN/Combo Modules</td>
<td>See Part Numbers and Ordering Information</td>
<td>Same as Cisco 3620</td>
<td>Same as Cisco 3620</td>
</tr>
<tr>
<td>WAN Modules</td>
<td>See Part Numbers and Ordering Information</td>
<td>Same as Cisco 3620</td>
<td>Same as Cisco 3620</td>
</tr>
<tr>
<td>ATM Modules</td>
<td>See Part Numbers and Ordering Information</td>
<td>Same as Cisco 3620</td>
<td>Same as Cisco 3620</td>
</tr>
<tr>
<td>Voice/Fax Network Modules</td>
<td>See Part Numbers and Ordering Information</td>
<td>Same as Cisco 3620</td>
<td>Same as Cisco 3620</td>
</tr>
<tr>
<td>WAN Interface Card (VIC) Modules</td>
<td>See Part Numbers and Ordering Information</td>
<td>Same as Cisco 3620</td>
<td>Same as Cisco 3620</td>
</tr>
<tr>
<td>Nuflexis Voice/WAN Interface Cards</td>
<td>See Part Numbers and Ordering Information</td>
<td>Same as Cisco 3620</td>
<td>Same as Cisco 3620</td>
</tr>
<tr>
<td>Voice Interface Card (VIC) Modules</td>
<td>See Part Numbers and Ordering Information</td>
<td>Same as Cisco 3620</td>
<td>Same as Cisco 3620</td>
</tr>
<tr>
<td>Multiflex Voice/WAN Interface Cards</td>
<td>See Part Numbers and Ordering Information</td>
<td>Same as Cisco 3620</td>
<td>Same as Cisco 3620</td>
</tr>
<tr>
<td>Modem Modules</td>
<td>See Part Numbers and Ordering Information</td>
<td>Same as Cisco 3620</td>
<td>Same as Cisco 3620</td>
</tr>
<tr>
<td>Performance</td>
<td>40 kpps</td>
<td>50-70 kpps</td>
<td>100-120 kpps</td>
</tr>
<tr>
<td>Flash Memory</td>
<td>8 MB (default); 32 MB (max)</td>
<td>Same as Cisco 3620</td>
<td>8 MB (default); 64 MB (max)</td>
</tr>
<tr>
<td>DRAM Memory</td>
<td>32 MB (default)</td>
<td>32 MB (default)</td>
<td>256 MB SDRAM (max)</td>
</tr>
<tr>
<td>Power Supply</td>
<td>AC, DC optional</td>
<td>AC, DC optional</td>
<td>Single or dual AC/DC</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>1.75 x 17.5 x 13.5 in.</td>
<td>8.7 x 17.5 x 11.8 in.</td>
<td></td>
</tr>
</tbody>
</table>

Cisco IOS Software and Memory Requirements

To run the Cisco IOS Feature Packs, you need the following amount of memory:

<table>
<thead>
<tr>
<th>Distribution Part Number</th>
<th>Feature Pack Description</th>
<th>IOS Image Release</th>
<th>Flash Memory Required</th>
<th>DRAM Memory Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD36-C-12.0.7=</td>
<td>IP only</td>
<td>12.0(7)XK</td>
<td>8 MB</td>
<td>32 MB</td>
</tr>
<tr>
<td>CD36-CP-12.0.7=</td>
<td>IP Plus</td>
<td>12.0(7)XK</td>
<td>16 MB</td>
<td>48 MB</td>
</tr>
<tr>
<td>CD36-CH-12.0.7=</td>
<td>IP/FW</td>
<td>12.0(7)XK</td>
<td>8 MB</td>
<td>32 MB</td>
</tr>
<tr>
<td>CD36-CHL-12.0.7=</td>
<td>IP/FW Plus IPSec 3DES</td>
<td>12.0(7)XK</td>
<td>16 MB</td>
<td>64 MB</td>
</tr>
<tr>
<td>CD36-CK2-12.0.7=</td>
<td>IP/Plus IPSec 3DES</td>
<td>12.0(7)XK</td>
<td>16 MB</td>
<td>48 MB</td>
</tr>
<tr>
<td>CD36-CL-2.0.7=</td>
<td>IP Plus IPSec 36</td>
<td>12.0(7)XK</td>
<td>16 MB</td>
<td>48 MB</td>
</tr>
<tr>
<td>CD36-B-12.0.7=</td>
<td>IP/IPX/AppleTalk/DECnet</td>
<td>12.0(7)XK</td>
<td>8 MB</td>
<td>32 MB</td>
</tr>
<tr>
<td>CD36-BP-12.0.7=</td>
<td>IP/IPX/AppleTalk/DECnet Plus</td>
<td>12.0(7)XK</td>
<td>16 MB</td>
<td>64 MB</td>
</tr>
<tr>
<td>CD36-BHP-12.0.7=</td>
<td>IP/IPX/AT/DEC/FW Plus</td>
<td>12.0(7)XK</td>
<td>16 MB</td>
<td>64 MB</td>
</tr>
<tr>
<td>CD36-AP-12.0.7=</td>
<td>Enterprise Plus</td>
<td>12.0(7)XK</td>
<td>16 MB</td>
<td>64 MB</td>
</tr>
<tr>
<td>CD36-AL-12.0.7=</td>
<td>Enterprise Plus IPSec 36</td>
<td>12.0(7)XK</td>
<td>16 MB</td>
<td>64 MB</td>
</tr>
<tr>
<td>CD36-AHK2-12.0.7=</td>
<td>Enterprise Plus IPSec 3DES</td>
<td>12.0(7)XK</td>
<td>16 MB</td>
<td>64 MB</td>
</tr>
<tr>
<td>CD36-AHL-12.0.7=</td>
<td>Enterprise/FW Plus IPSec 36</td>
<td>12.0(7)XK</td>
<td>16 MB</td>
<td>64 MB</td>
</tr>
</tbody>
</table>

Cisco 3660

| CD36-C-12.0.7=           | IP only                  | 12.0(7)XK         | 8 MB                  | 64 MB SDRAM          |
| CD36-CP-12.0.7=          | IP Plus                  | 12.0(7)XK         | 16 MB                 | 64 MB SDRAM          |
| CD36-CH-12.0.7=          | IP/FW                    | 12.0(7)XK         | 8 MB                  | 64 MB SDRAM          |
| CD36-CHL-12.0.7=         | IP/FW Plus IPSec 36      | 12.0(7)XK         | 16 MB                 | 64 MB SDRAM          |
| CD36-CK2-12.0.7=         | IP/Plus IPSec 3DES       | 12.0(7)XK         | 16 MB                 | 64 MB SDRAM          |
| CD36-CL-2.0.7=           | IP Plus IPSec 36         | 12.0(7)XK         | 16 MB                 | 64 MB SDRAM          |
| CD36-B-12.0.7=           | IP/IPX/AppleTalk/DECnet  | 12.0(7)XK         | 8 MB                  | 64 MB SDRAM          |
| CD36-BP-12.0.7=          | IP/IPX/AppleTalk/DECnet Plus | 12.0(7)XK     | 16 MB                 | 64 MB SDRAM          |
## Chapter 1 Routers

### Cisco 3600 Series

#### Selected Part Numbers and Ordering Information

**CD36-BHP-12.0.7=** IP/IPX/AT/DEC/FW Plus 12.0(7)KX 16 MB 64 MB SDRAM

**CD36-AP-12.0.7=** Enterprise Plus 12.0(7)KX 16 MB 64 MB SDRAM

**CD36-AHZ-12.0.7=** Enterprise Plus IPSec 56 12.0(7)KX 16 MB 64 MB SDRAM

**CD36-AHK2-12.0.7=** Enterprise/FW Plus IPSec 3DES 12.0(7)KX 16 MB 64 MB SDRAM

**CD36-AHL-12.0.7=** Enterprise/FW Plus IPSec 56 12.0(7)KX 16 MB 64 MB SDRAM

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
2. Bold numbers indicate that more memory than the default amount is needed to run the Feature Pack.

### Cisco 3600 Series Router Chassis

**CISCO3620** 2-slot Modular Router-AC Power Supply, IP s/w

**CISCO3620-DC** 2-slot Modular Router-DC Power Supply, IP s/w

**CISCO3620-RPS** 2-slot Modular Router, w/ RPS, IP s/w

**CISCO3640** 4-slot Modular Router-AC Power Supply, IP s/w

**CISCO3640-DC** 4-slot Modular Router-DC Power Supply, IP s/w

**CISCO3640-RPS** 4-slot Modular Router, w/ RPS, IP s/w

**CISCO3661** 10/100 E Cisco 3660 6-slot Modular Router-DC with IP SW

**CISCO3661-AC** 10/100 E Cisco 3660 6-slot Modular Router-AC with IP SW

**CISCO3662** Dual 10/100 E Cisco 3660 6-slot Modular Router-DC with IP SW

**CISCO3662-AC** Dual 10/100 E Cisco 3660 6-slot Modular Router-AC with IP SW

### Cisco 3600 Series Bundles

**3640MBUNDLE-4B-S/T** 3640 BRI Dial bundle. Includes 1E2W, 12DM, 4 BRI-S/T, IP IOS

**3640MBUNDLE-4B-U** 3640 BRI Dial bundle. Includes 1E2W, 12DM, 4 BRI-U, IP IOS

**3640MBUNDLE-8B-S/T** 3640 BRI Dial bundle. Includes 1E2W, 18DM, 8 BRI-S/T, IP IOS

**3640MBUNDLE-8B-U** 3640 BRI Dial bundle. Includes 1E2W, 18DM, 8 BRI-U, IP IOS

**3620MBUNDLE-24DM** 3620 PRI Dial bundle. Includes 1FE2CT1-CSU, 24DM, IP IOS

**AS3640-T1-48DM** 3600 Access Concentrator, 48 MICA Modems, 2 PRI/T1, Ethernet, IP IOS

### Cisco 2600/2600XM and 3600 Series ATM Modules

### Cisco 2600/2600XM and 3600 Series WAN Interface Cards (WICs)

### Cisco 2600/2600XM and 3600 Series Multiflex Voice/WAN Interface Cards

### Cisco 2600/2600XM and 3600 Series Voice/Fax Network Modules

### Cisco 2600/2600XM and 3600 Series High-Density Voice/Fax DSP Upgrade Modules

### Cisco 3600 Series Voice Interface (VIC) Cards

### Cisco 3600 Series LAN/Combo Network Modules

### Distribution

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Feature Pack Description</th>
<th>IOS Image Release</th>
<th>Flash Memory Required2</th>
<th>DRAM Memory Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD36-BHP-12.0.7=</td>
<td>IP/IPX/AT/DEC/FW Plus</td>
<td>12.0(7)KX</td>
<td>16 MB</td>
<td>64 MB SDRAM</td>
</tr>
<tr>
<td>CD36-AP-12.0.7=</td>
<td>Enterprise Plus</td>
<td>12.0(7)KX</td>
<td>16 MB</td>
<td>64 MB SDRAM</td>
</tr>
<tr>
<td>CD36-AHZ-12.0.7=</td>
<td>Enterprise Plus IPSec 56</td>
<td>12.0(7)KX</td>
<td>16 MB</td>
<td>64 MB SDRAM</td>
</tr>
<tr>
<td>CD36-AHK2-12.0.7=</td>
<td>Enterprise/FW Plus IPSec 3DES</td>
<td>12.0(7)KX</td>
<td>16 MB</td>
<td>64 MB SDRAM</td>
</tr>
<tr>
<td>CD36-AHL-12.0.7=</td>
<td>Enterprise/FW Plus IPSec 56</td>
<td>12.0(7)KX</td>
<td>16 MB</td>
<td>64 MB SDRAM</td>
</tr>
</tbody>
</table>

---

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
2. Bold numbers indicate that more memory than the default amount is needed to run the Feature Pack.
## Chapter 1  Routers

### Cisco 3600 Series WAN Modules
- **NM-4B-S/T**: 4-port BRI (S/T) Module
- **NM-8B-S/T**: 8-port BRI (S/T) Module
- **NM-8B-U**: 8-port BRI (U) with NT-1 Module
- **NM-4A/S**: 4-port Async/Sync Serial Module
- **NM-8A/S**: 16-port Async Module
- **NM-32A**: 32-port Async Module
- **NM-J1CT1**: 1-port Channelized T1/USDN-PRI Module
- **NM-J1CT1-CSU**: 1-port Channelized T1/USDN-PRI w/ CSU Module
- **NM-J2CT1**: 2-port Channelized T1/USDN-PRI Module
- **NM-J2CT1-CSU**: 2-port Channelized T1/USDN-PRI w/ CSU Module
- **NM-JHSSI**: 1-port HSSI Module
- **NM-COMPR**: Compression Module

### Cisco 3600 AIM Modules
- **AIM-VPN/HP**: DES/3DES VPN Encryption AIM for the 3620/3640 Mid-Platform
- **AIM-COMPR4**: Data Compression AIM for the 3600 series
- **AIM-ATM**: ATM SAR Only ATM
- **AIM-ATM-VOICE-30**: 30-Channel T1/E1 Digital Voice Module
- **AIM-VOICE-30**: SAR and 30-Channel T1/E1 Digital Voice Module

### Cisco 3620/40 VPN Module
- **NM-VPN/MP**: DES/3DES VPN Encryption NM for the 3620/3640 Mid-Platform

### Cisco 3600 Series Modem Modules
- **NM-6DM**: 6-port Digital Modem Module
- **NM-8AM**: 8-port Analog Modem Module
- **NM-12DM**: 12-port Digital Modem Module
- **NM-16AM**: 16-port Analog Modem Module
- **NM-18DM**: 18-port Digital Modem Module
- **NM-24DM**: 24-port Digital Modem Module
- **NM-30DM**: 30-port Digital Modem Module
- **MICA-6MOD**: 6-port Digital Modem Module (Spare)

### Cisco 3600 Series Modem Management Technology Licenses
- **MTL-3600-6**: Modem Management Technology License (6 modems)
- **MTL-3600-12**: Modem Management Technology License (12 modems)
- **MTL-3600-24**: Modem Management Technology License (24 modems)
- **MTL-3600-30**: Modem Management Technology License (30 modems)
- **MTL-3600/2600-8**: Modem Management Technology License (for 8 Analog Modems)
- **MTL-3600/2600-16**: Modem Management Technology License (for 16 Analog Modems)

### Cisco 3600 Series Memory Options
- **MEM3600-8FC**: Cisco 3600 Series 8 MB Flash PCMCIA Card
- **MEM3600-16FC**: Cisco 3600 Series 16 MB Flash Card
- **MEM3600-8FS**: Cisco 3600 Series 8 MB Flash
- **MEM3600-16FS**: Cisco 3600 Series 16 MB Flash
- **MEM3600-2X8FS**: Cisco 3600, 16 MB Flash (2x8 MB Flash SIMMs)
- **MEM3600-2X16FS**: Cisco 3600, 32 MB Flash (2x16 MB Flash SIMMs)
- **MEM3600-8D**: Cisco 3620, 8 MB DRAM SIMM
- **MEM3600-16D**: Cisco 3620, 16 MB DRAM SIMM
- **MEM3640-2X8D**: Cisco 3640, 16 MB DRAM (2x8 MB DRAM SIMMs)
- **MEM3640-2X16D**: Cisco 3640, 32 MB DRAM (2x16 MB DRAM SIMMs)
- **MEM3640-2X32D**: Cisco 3640, 64 MB DRAM (2x32 MB DRAM SIMMs)
- **MEM3640-4X32D**: Cisco 3640, 128 MB DRAM (4x32 MB DRAM SIMMs)
- **MEM3660-32D**: Cisco 3660, 32 MB SDRAM Field Upgrade
- **MEM3660-128D**: Cisco 3660, 128 MB SDRAM Field Upgrade
- **MEM3660-2X64D**: Cisco 3660, 256 MB Flash (2x64 MB Flash DIMMs)
- **MEM3660-2X128D**: Cisco 3660, 256 MB Flash (2x128 MB Flash DIMMs)
- **BOOT-3600**: Boot ROM Upgrade for Cisco 3600
The Cisco 3700 Series is a new line of modular routers that 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 branch office IP Telephony, voice gateway, 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.
Chapter 1  Routers

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)
- Full support for Cisco IOS voice suite of features
- 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, and Survivable Remote Site Telephony
- 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
- New integrated switching modules (16- and 36-port)
- Common user interface with Catalyst series switches
- Simplified management from a single platform for ease of configuration, deployment, and troubleshooting
- Integrated inline power for wireless access points and IP phones
- GigE connectivity

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
## Specifications

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

### Selected Part Numbers and Ordering Information

**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-1HSSI: 1-port high speed serial interface module

**Asynchronous Network Modules**
- NM-16A: 16 Async Ports networking module
- NM-32A: 32 Async Ports networking module

**LAN Network Modules and Mixed-Media LAN & WAN Network Modules**
- NM-2W: 2 WAN Card Slot Network Module (no LAN)
- NM-1FE2W: 10/100 Ethernet 2 WAN Card Slot Network Module
- NM-1FE12W: 10/100 Ethernet 1/4/8 Token Ring 2 WAN Card Slot Module
- NM-3FE2W: 20/100 Ethernet 2 WAN Card Slot Network Module
- NM-1FE-FX: 1-port Fast Ethernet network module (10/100BaseT only)
Chapter 1 Routers

Digital Packet Voice and Fax Trunk Network 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-1E1-30E: Single-port, enhanced 30-channel E1 voice/fax Network Module (supports 30 channels of high and medium complexity VoCoders: G.726a/b, G.726, G.729, G.728, G.723.1, G.711 and fax)
- NM-HDV-1E1-60: Dual-port, 60-channel E1 voice/fax Network Module (supports 60 channels of medium complexity VoCoders: G.729a/b, G.726, G.711 and fax or 30 channels of G.726, G.729, G.723.1, G.728, G.729a/b, G.711 and fax)
- NM-HDV-1T1-24: Single-port, 24-channel T1 voice/fax Network Module (supports 24 channels of medium complexity VoCoders: G.726a/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.726a/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.711 and fax or 30 channels of G.726, G.729, G.723.1, G.728, G.729a/b, G.711 and fax)

Analog Packet Voice and Fax Trunk Network Modules
- NM-2V: 2-slot voice and fax network module
- NM-HDA: High Density Analog 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-2FXO-M: 2-port voice interface card—FXO
- 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-N/T-TE: 2-port voice interface card—BRI (Network side)

ATM Network Modules
- NM-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-3V: 1-slot voice and fax network module
- NM-2V: 2-slot voice and fax network module
- NM-HDA: High Density Analog 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-2FXO-M: 2-port voice interface card—FXO
- 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-N/T-TE: 2-port voice interface card—BRI (Network side)

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-3A-T3: 1-port DS3 ATM network module
- NM-3A-E3: 1-port E3 ATM network module
- AIM-ATM: ATM cell processing module

Serial WAN Interface Cards
- WIC-1DSU-T1: 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 Rx - 48 MultiFlex Trunk—T1
- VWIC-2MFT-T1: 2-port Rx - 48 MultiFlex Trunk—T1
- VWIC-2MFT-T1-DI: 2-port Rx - 48 MultiFlex Trunk—T1 with Drop and Insert
- VWIC-1MFT-E1: 1-port Rx - 48 MultiFlex Trunk—E1
- VWIC-2MFT-E1: 2-port Rx - 48 MultiFlex Trunk—E1
- VWIC-2MFT-E1-DI: 2-port Rx - 48 MultiFlex Trunk—E1 with Drop and Insert
- VWIC-1MFT-G703: 1-port Rx - 48 MultiFlex Trunk—G703 unstructured
- VWIC-2MFT-G703: 2-port Rx - 48 MultiFlex Trunk—G703 unstructured

ISDN WAN Interface Cards
- WIC-1B-S/T: 1-port ISDN BRI
- WIC-1B-U: 1-port ISDN BRI with NTI
### ISDN and Channelized Serial Network Modules

- NM-1CT1: 1-port channelized T1/ISDN PRI network module
- NM-1CT1-CSU: 1-port channelized T1/ISDN PRI with CSU network module
- NM-2CT1: 2-port channelized T1/ISDN PRI network module
- NM-2CT1-CSU: 2-port channelized T1/ISDN PRI with CSU network module
- 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
- NM-4B-U: 4-port ISDN BRI 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-32DM: 32-port digital modem network module
- NM-8AM: 8-port analog modem Network Module
- NM-16AM: 16-port analog modem Network Module
- NM-8AMJ: 8-port analog modem Network Module—Japan
- NM-16AMJ: 16-port analog modem Network Module—Japan

### Digital Subscriber Line (DSL)

- WIC-1ADSL: 1-port ADSL WAN Interface Card
- WIC-G.SHDSL: 1-port G.shDSL WAN Interface Card

### Encryption Advanced Integration Modules

- AIM-CMP-8R: Data Compression AIM for 3660 Series (4 E1 performance)
- AIM-VPN/HP: DES/3DES VPN Encryption AIM for 3660-High Performance
- AIM-VPN/EDES/3DES: VPN Encryption AIM for 2600 Enhanced Performance

### 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-3GIG: One 16 port 10/100 EtherSwitch NM with 3 GE (1000BASE-T) port
- PPWR-DACARD-16ESW: One Inline power daughter card for 16 port EtherSwitch NMs
- NM-D-36-ESW: One 36 port 10/100 EtherSwitch High Density Service Module
- NM-D-36-ESW-PWR: One 36 port 10/100 EtherSwitch HDSM with Inline Power
- NM-D-36-ESW-HDSDM: One 36 port 10/100 EtherSwitch HDSM with two GE (1000BASE-T)
- NM-D-36-ESW-PWR-2G: One 36 port 10/100 EtherSwitch HDSM + Inline Power and two GE
- PPWR-DACARD-36E5W: One Inline Power daughter card for 36 port EtherSwitch HDSMs
- GE-DCARD-ESW: One GE (1000BASE-T) daughter card for EtherSwitch M modules
- PPWR-PS-360W: One 48V (360W) power supply for EtherSwitch M modules
- PPWR-PS-Chassis: One power supply chassis for Cisco 48V (360W) power supply
- PWRSUB-360: One power supply chassis and 48V power supply for EtherSwitch
- CAB-PPWR-PS-1: Connects one EtherSwitch power supply to one EtherSwitch Module
- CAB-PPWR-PS-2: Connects two EtherSwitch power supplies to two EtherSwitch Modules

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 Product Reference Guide at: http://www.cisco.com/dpg (limited country availability).

**For More Information**

See the Cisco 3600 Series Web site: [http://www.cisco.com/go/3700](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. The platform also supports sites that require IBM data center connectivity as well as sites that require 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

<table>
<thead>
<tr>
<th>Sell This Product</th>
<th>When a Customer Needs These Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco 7204VXR</td>
<td>• 4-slot chassis</td>
</tr>
<tr>
<td></td>
<td>• Modular processor: 225, 400, 900 Kpps (NPE-225, NPE-400, NPE-G1) or 300 Kpps service accelerator (NSE-1)</td>
</tr>
<tr>
<td></td>
<td>• 1.2 Gbps backplane</td>
</tr>
<tr>
<td></td>
<td>• MIX-enabled bus for data/voice/video applications</td>
</tr>
<tr>
<td>Cisco 7206VXR</td>
<td>• 6-slot chassis</td>
</tr>
<tr>
<td></td>
<td>• Modular processor: 225, 400, 900 Kpps (NPE-225, NPE-400, NPE-G1) or 300 Kpps service accelerator (NSE-1)</td>
</tr>
<tr>
<td></td>
<td>• 1.2 Gbps backplane</td>
</tr>
<tr>
<td></td>
<td>• MIX-enabled bus for data/voice/video applications</td>
</tr>
</tbody>
</table>

Key Features

- Compact Form Factor—Up to six port adapters in a fully modular 3RU form factor. The optional Rack Density System (RDS) allows for up to nine Cisco 7206 routers per rack with front-to-back airflow
- 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 900 Kpps processing at a competitive price point
- Feature Rich—Full support for Cisco IOS software and enhancements for high-performance network services enables the Cisco 7200 to offer industry-leading network services, including: MPLS, broadband aggregation, quality of service (QoS), 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: M5, M10
- Unisphere: ERX700, ERX1400

### Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco 7204VXR</th>
<th>Cisco 7206VXR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Ports</td>
<td>None</td>
<td>Same as 7204VXR</td>
</tr>
<tr>
<td>Expansion Slots</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>WAN Port Adapters</td>
<td>DS0 to OC-12</td>
<td>Same as 7204VXR</td>
</tr>
<tr>
<td>Processor</td>
<td>RM 7K RISC Processor with optional PXF Processor</td>
<td>Same as 7204VXR</td>
</tr>
<tr>
<td>Forwarding Rate</td>
<td>Up to 1 Mpps</td>
<td>Same as 7204VXR</td>
</tr>
<tr>
<td>Backplane Capacity</td>
<td>1.2 Gbps</td>
<td>Same as 7204VXR</td>
</tr>
<tr>
<td>Flash PCM CI A Memory</td>
<td>48 M B (expandable to 256 M B)</td>
<td>Same as 7204VXR</td>
</tr>
<tr>
<td>System DRAM Memory</td>
<td>128 M B (expandable to 1 GB)</td>
<td>Same as 7204VXR</td>
</tr>
<tr>
<td>Minimum Cisco IOS Release</td>
<td>12.0(1)T</td>
<td>Same as 7204VXR</td>
</tr>
<tr>
<td>Internal Power Supply</td>
<td>AC or DC, dual option</td>
<td>Same as 7204VXR</td>
</tr>
<tr>
<td>Redundant Power Supply</td>
<td>Yes, for AC or DC</td>
<td>Same as 7204VXR</td>
</tr>
<tr>
<td>Chassis Height</td>
<td>3 RU</td>
<td>Same as 7204VXR</td>
</tr>
<tr>
<td>Rack Mountable</td>
<td>Yes, up to 16 per rack</td>
<td>Same as 7204VXR</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>5.25 x 16.8 x 17 in.</td>
<td>Same as 7204VXR</td>
</tr>
</tbody>
</table>

### Cisco IOS Software and Memory Requirements

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.

<table>
<thead>
<tr>
<th>Distribution Part Number</th>
<th>Feature Pack Description</th>
<th>IOS Image Release</th>
<th>Flash Memory Required</th>
<th>DRAM Memory Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD72-C-12.1T</td>
<td>IP</td>
<td>12.1T</td>
<td>16MB</td>
<td>64MB</td>
</tr>
<tr>
<td>CD72-CX2-12.1E</td>
<td>IP,IPSEC,3DES</td>
<td>12.1E</td>
<td>16MB</td>
<td>64MB</td>
</tr>
<tr>
<td>CD72-CX2-12.1T</td>
<td>IP,IPW-IP,IPSEC,3DES</td>
<td>12.1T</td>
<td>16MB</td>
<td>64MB</td>
</tr>
<tr>
<td>CD72-A-12.1T</td>
<td>Enterprise</td>
<td>12.1T</td>
<td>16MB</td>
<td>64MB</td>
</tr>
</tbody>
</table>

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](http://www.cisco.com/go/fn)

### Selected Part Numbers and Ordering Information

- **Cisco 7204 Chassis**
  - CISCO7204VXR: Cisco 7204VXR, 4-slot chassis, 1 AC Supply w/IP Software
  - CISCO7204VR/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 CPE Bundles**
  - 7204VR/CPE: 7204VR w/NPE-225, 2 FE I/O, choice of specified WAN PA

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

- **Cisco 7200 VPN Bundle**
  - 7204VR/VPN/100K9: 7204VR VPN Bundle NPE400,128M B, I/O 2FE, ISA,IPSEC 3DES IOS
  - 7204VR/VPN/2D2K9: 7204VR VPN Bundle NPE400,256M B, I/O 2FE, VAM,IPSEC 3DES IOS
  - 7206VR/VPN/2D2K9: 7206VR VPN Bundle NPE400,256M B, I/O 2FE, VAM,IPSEC 3DES IOS
  - 7206VR/VPN/1G2K9: 7206VR VPN Bundle NPE400,128M B, 3 FE/GE, VAM,IPSEC 3DES IOS

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**Cisco 7200 Series**

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1-32
Cisco 7200 Series Processors

NPE-G1= Cisco 7200 Network Processing Engine G1 including 256MB default DRAM and 64MB default flash memory.
NPE-225= Network Processing Engine 225 (128MB default memory)-spare
NPE-400= NPE-400XR Network Processing Engine 1 (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 Rack Mount Systems

CISCO7200RDS= Cisco 7200 Rack Density System

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

Cisco 7200 Processor Memory: NPE-100, NPE-150, NPE-200

MEM-NPE-100-16M B= 16MB Memory Upgrade Kit for NPE-100/NPE-150/NPE-200
MEM-NPE-100-32M B= 32MB Memory Upgrade Kit for NPE-100/NPE-150/NPE-200
MEM-NPE-100-64M B= 2 x 32MB memory modules (64MB total) for NPE-100/NPE-150/NPE-200
MEM-NPE-128M B= 128MB Memory Upgrade Kit for NPE-100/NPE-150/NPE-200
MEM-NPE-150-32M B= 32MB Memory Upgrade Kit for NPE-200/NPE-150/NPE-100
MEM-NPE-200-64M B= 2 x 32MB memory modules (64MB total) for NPE-200/NPE-150/NPE-100
MEM-NPE-200-128M B= 128MB Memory Upgrade Kit for NPE-200/NPE-150/NPE-100
MEM-NPE-200-256M B= 1 x 128MB memory modules (256MB total) for the NPE-300 in 7200
MEM-NPE-200-512M B= 1 x 512MB memory modules (512MB total) for the NPE-300 in 7200
MEM-NPE-300-128M B= 128MB Memory Upgrade Kit for NPE-300 in 7200 Series
MEM-NPE-300-256M B= 256MB Memory Upgrade Kit for NPE-300 in 7200 Series
MEM-NPE-300-512M B= 512MB Memory Upgrade Kit for NPE-300 in 7200 Series
MEM-NPE-400-128M B= 128MB Memory Upgrade Kit for NPE-400 in 7200 Series
MEM-NPE-400-256M B= 256MB Memory Upgrade Kit for NPE-400 in 7200 Series
MEM-NPE-400-512M B= 512MB Memory Upgrade Kit for NPE-400 in 7200 Series
MEM-NPE-400-1024M B= 1024MB Memory Upgrade Kit for NPE-400 in 7200 Series
MEM-NPE-400-2048M B= 2048MB Memory Upgrade Kit for NPE-400 in 7200 Series
MEM-NPE-400-4096M B= 4096MB Memory Upgrade Kit for NPE-400 in 7200 Series

Cisco 7200 Series Port Adapters

PA-AC-E= 1 Port Enhanced ESCON Channel Port Adapter
PA-A2-4E1C-EXATM= 4 Port Extended E1/T1 Port Adapter
PA-A2-4E1C-OCSM= 4 Port Extended E1/T1 Port Adapter
PA-A2-4T1C-OCSM= 4 Port Extended T1 E1 Port Adapter
PA-A2-4T1C-T3ATM= 4 Port Extended T1 E1 Port Adapter
PA-GE= Gigabit Ethernet Port Adapter
PA-MCX-2TE1= 2 Port MX-enabled multichannel T2/E1 PA with CSU/DSU
PA-MCX-4TE1= 4 Port MX-enabled multichannel T2/E1 PA with CSU/DSU
PA-MCX-8TE1= 8 Port MX-enabled multichannel T2/E1 PA with CSU/DSU
PA-SRP-OC12M= DPT-OC12 Multimode port adapter
PA-SRP-OC12S= DPT-OC12 Single-mode port adapter
PA-SRP-OC12ML= DPT-OC12 Single-mode long-reach port adapter
PA-SRP-OC12MX= DPT-OC12 Multimode extended reach PA
### PA-VXC-2TE1+= 2 port TE1 high-capacity enhanced voice PA
### PA-VXB-2TE1+= 2 port T1/E1 moderate capacity enhanced voice PA
### PA-T3= 1 Port T3 Serial Port Adapter with T3 DSUs
### PA-T3+= 1 Port T3 Serial Port Adapter Enhanced
### PA-POS-OC3SM L= 1 Port Packet SONET OC3c/STM 1 Singlemode (LR) PA
### PA-POS-OC3SM R= 1 Port Packet SONET OC3c/STM 1 Singlemode (IR) PA
### PA-POS-OC3M M= 1 Port Packet SONET OC3c/STM 1 M ultimode PA
### PA-POS-2OC3= 2 Port Packet SONET OC3c/STM 1 Port Adapter
### PA-M-C-T3a= 1 port multichannel T3 port adapter
### PA-M-C-E3a= 1 port Multi-Channel E3 port adapter
### PA-M-C-4T1= 4 port multichannel T1 port adapter with integrated CSU/DSUs
### PA-M-C-2T3+= 2 port multichannel T3 port adapter Enhanced, Spare
### PA-M-C-2T1= 2 port multichannel T1 port adapter with integrated CSU/DSUs
### PA-M-C-2E1/120= 2 port multichannel E1 port adapter with G.703 120ohm interfac
### PA-H= Port Adapter: 1 Port HSSI
### PA-E3= 1 Port E3 Serial Port Adapter with E3 DSU
### PA-A3-T3= 1 Port ATM Enhanced DS3 Port Adapter (Spare)
### PA-A3-OC3SM L= 1 Port ATM Enhanced OC3c/STM 1 Singlemode (LR) Port Adapter
### PA-A3-OC3SM R= 1 Port ATM Enhanced OC3c/STM 1 Singlemode (IR) Port Adapter
### PA-A3-OC3M M= 1 Port ATM Enhanced OC3c/STM 1 M ultimode Port Adapter
### PA-A3-E3= 1 Port ATM Enhanced E3 Port Adapter (Spare)
### PA-A3-BE1JM A= 8-port ATM Inverse Mux E1 (120 Ohm) Port Adapter, Spare
### PA-8T-X21= 8-Port Serial, X.21 Port Adapter
### PA-8T-V35= 8-Port Serial, V.35 Port Adapter
### PA-MC-T3= 1 Port multichannel T3 port adapter
### PA-MC-STM-1SM= 1 port multichannel STM-1 single mode port adapter
### PA-MC-STM-1MM= 1 port multichannel STM-1 multimode port adapter
### PA-MC-8TE1+= 8 port multichannel T1/E1 8PRI port adapter
### PA-F/FD-SM= 1-Port FDDI Full Duplex Single-Mode Port Adapter
### PA-F/FD-MM= 1-Port FDDI Full Duplex Multi-Mode Port Adapter
### PA-A3-BT1JM A= 8-port ATM Inverse Mux T1 Port Adapter, Spare
### PA-4R-DTR= Port Adapter: 4 Port Dedicated Token Ring, 4/16Mbps, HDX/FOX
### SA-ISA= Integrated Services Adapter for IPSec or MPP encryption
### SA-VAM= VPN Acceleration Module (VAM) IPSec and IPComp Acceleration
### GBIC-LX/LH= Gigabit Interface Converter for 1000BASE-LX standard
### GBIC-SX= Gigabit Interface Converter for 10GBASE-SX (Short Wavelength)
### GBIC-ZX= Gigabit Interface Converter for 10GBASE-ZX
### POM-OCS2-M= 1-port OC3STM1 Pluggable Optic Module, M M
### POM-OCS2-MIR= 1-port OC3STM1 Pluggable Optic Module, SM-LR
### POM-OCS2-LR= 1-port OC3STM1 Pluggable Optic Module, SM-LR
Chapter 1  Routers

Cisco 7200 Series

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. Coupled with powerful network processing, a broad set of interfaces and a compact, modular form factor the Cisco 7300 Series Routers are ideal for intelligent, multi-gigabit network connectivity.

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 new 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/STM 16 with 3.5 Mpps performance
- Built-in Gigabit Ethernet connectivity
- Multi-protocol routing: IP, IPX, AppleTalk, DLSw
- Compact size, high availability and optimal cooling

When to Sell

When to Sell

Cisco 7200 Series Power Supplies

- PWR-7200-DC+= Cisco 7200 DC (24V-60V) Power Supply Option
- PWR-7200/2-DC+= Cisco 7200 Dual DC (24V-60V) Power Supply Option
- PWR-7200-AC= Cisco 7200 AC Power Supply With United States Cord
- PWR-7200-ACA= Cisco 7200 AC Power Supply With Australian Cord
- PWR-7200-ACE= Cisco 7200 AC Power Supply With European Cord
- PWR-7200-ACI= Cisco 7200 AC Power Supply With Italian Cord
- PWR-7200-ACU= Cisco 7200 AC Power Supply With United Kingdom Cord

Cisco 7200 Series Spares and Accessories

- ACS-7200-RMK= Cisco 7200 Rackmount Kit and Cable Management Bracket
- CVPN7200FIPS/KIT= Kit (instructions, labels) to configure 7206 for FIPS operation

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. Coupled with powerful network processing, a broad set of interfaces and a compact, modular form factor the Cisco 7300 Series Routers are ideal for intelligent, multi-gigabit network connectivity.

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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

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- Highly modular price and performance optimized platform, rich in IP services
- High performance connectivity— DS-1 through OC48/STM 16 with 3.5 Mpps performance
- Built-in Gigabit Ethernet connectivity
- Multi-protocol routing: IP, IPX, AppleTalk, DLSw
- Compact size, high availability and optimal cooling
Chapter 1  Routers

Key Features

• Cisco 7301: With nearly 1 million-packets-per-second (Mpps) processing performance, the fastest Cisco 1RU general-purpose processor, as of January 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 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

• Unisphere: ERX700, ERX1400

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco 7301</th>
<th>Cisco 7304</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Ports</td>
<td>Three Gigabit Ethernet ports</td>
<td>Same as 7301</td>
</tr>
<tr>
<td>Expansion Slots</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>WAN Interface Range</td>
<td>DS-1 to OC-3</td>
<td>T3 to OC-48</td>
</tr>
<tr>
<td>Processor</td>
<td>RM 7000 MIPS Processor + PXF Processor</td>
<td>RM 7000 MIPS Processor + PXF Processor</td>
</tr>
<tr>
<td>Forwarding Rate</td>
<td>Up to 1 Mpps</td>
<td>Up to 3.5 Mpps</td>
</tr>
<tr>
<td>Backplane Capacity</td>
<td>1.2 Gbps</td>
<td>16 Mbps</td>
</tr>
<tr>
<td>Flash PCMCIA Memory</td>
<td>64 MB (expandable to 128 MB)</td>
<td>Same as 7301</td>
</tr>
<tr>
<td>System DRAM Memory</td>
<td>128 MB (expandable to 512 MB)</td>
<td>Same as 7301</td>
</tr>
<tr>
<td>Minimum Cisco IOS Release</td>
<td>12.2(11)TZY</td>
<td>12.3(19)EX</td>
</tr>
<tr>
<td>Internal Power Supply</td>
<td>Yes, for AC or DC</td>
<td>Same as 7301</td>
</tr>
<tr>
<td>Redundant Power Supply Support</td>
<td>Yes, up to 40 per rack</td>
<td>Yes, up to 11 per rack</td>
</tr>
<tr>
<td>Chassis Height</td>
<td>1 RU</td>
<td>4 RU</td>
</tr>
<tr>
<td>Rack Mountable</td>
<td>Yes, up to 40 per rack</td>
<td>Yes, up to 11 per rack</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>1.13 x 17.3 x 19.89 in.</td>
<td>3.7 x 17.2 x 20.3 in.</td>
</tr>
</tbody>
</table>

Selected Part Numbers and Ordering Information

Cisco 7300 System

- PWR-7301-AC: Cisco 7301 AC Power Supply Option
- PWR-7301/2-AC: Cisco 7301 Dual AC Power Supply Option
- PWR-7301-DC48: Cisco 7301 DC48 Power Supply Option
- PWR-7301/2-DC48: Cisco 7301 Dual DC48 Power Supply Option
- PWR-7301-OC24: Cisco 7301 OC24 Power Supply Option
- CISCO7301: Cisco 7301 chassis, 256MB & memory, A/C power, 64MB Flash
- CISCO7304= Cisco 7304, 4-slot chassis
- CISCO7304-CH: Cisco 7304 C-channel bundle
- 7300-NSE-100: Cisco 7304 Network Services Engine 100
- 7300-NSE-100/2: Redundant Cisco 7304 NSE-100 w/Redundancy Feature License
- 7300-PWR-OC: Cisco 7304 OC Power Supply Spare
- 7300-PWR-AC: Cisco 7304 AC Power Supply Spare
- 7300-PWR-OC: Cisco 7304 Redundant DC Power Supply Option
- 7300-PWR-AC: Cisco 7304 Redundant AC Power Supply Option
Cisco 7300 Series

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Cisco 7300 Memory Options
MEM-7301-1GB = 1GB memory upgrade for 7301
MEM-7301-512M = 512M B memory upgrade for 7301
MEM-7301-256M = 256M B memory upgrade for 7301
7300-MEM-128= 128M B default SDRAM for 7304 NSE-100, spare
7300-MEM-512= 512M B SDRAM for 7304 NSE-100, spare
7300-1OC-CFM-512M = Cisco 7304 CompactFlash Memory, 512 MB
7300-1OC-CFM-128M = Cisco 7304 CompactFlash Memory, 128 MB

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

Cisco 7300 Series Transceiver Modules
GBIC-LX/LH= Gigabit Interface Converter for 1000BASE-LX standard
GBIC-SX= Gigabit Intf. Converter For 1000BASE-SX (Short Wavelength)
GBIC-ZX= Gigabit Interface Converter for 1000 BASE-ZX

Cisco 7300 Accessories
7300-HALFSLOTBLNK= Cisco 7304 Half Slot Blank Line Card
7300-4RU/RCKBRKT= Cisco 7304 Chassis Rackmount Bracket Spare
7300-CNTR-SPTUM= Cisco 7304 Center Septum Spare

Cisco 7300 Software Options
S73A-12215B= Cisco 7300 Series IOS ENTERPRISE
S73AH-12215B= Cisco 7301 Series IOS ENTERPRISE/FW/IDS
S73AHK8-12215B= Cisco 7301 Series IOS ENTERPRISE/FW/IDS IPSEC 56
S73AHK9-12215B= Cisco 7301 Series IOS ENTERPRISE/FW/IDS IPSEC 3DES
S73AS-12215B= Cisco 7301 Series IOS ENTERPRISE SSG
S73C-12215B= Cisco 7301 Series IOS IP
S73A-12211YZ= Cisco 7300 Series IOS ENTERPRISE
S73C-12211YZ= Cisco 7300 Series IOS IP PLUS
S730A-12211YZ= Cisco 7301 Series IOS ENTERPRISE
S730C-12211YZ= Cisco 7301 Series IOS IP
S730Z-12211YZ= Cisco 7301 Series IOS SERVICE PROVIDER
S73A-12113EX= Cisco 7300 IOS ENTERPRISE
S73AH-12113EX= Cisco 7301 series IOS ENTERPRISE/FW/IDS IPSEC 3DES
S73AHK2-12113EX= Cisco 7301 series IOS ENTERPRISE/FW/IDS IPSEC 3DES
S73AHL-12113EX= Cisco 7300 IOS ENTERPRISE/FW/IDS IPSEC 56
S73AR1P-12113EX= Cisco 7301 series IOS ENTERPRISE/FW/IDS IPSEC 56
S73CHK2-12113EX= Cisco 7301 series IOS ENTERPRISE/FW/IDS IPSEC 3DES
S73CHL-12113EX= Cisco 7300 IOS ENTERPRISE/FW/IDS IPSEC 56
S73CP-12113EX= Cisco 7300 IOS IP
S73A-12112EX= Cisco 7301 series IOS ENTERPRISE
S73AH-12112EX= Cisco 7301 series IOS ENTERPRISE/FW/IDS IPSEC 3DES
S73AHL-12112EX= Cisco 7301 series IOS ENTERPRISE/FW/IDS IPSEC 56
S73AR1P-12112EX= Cisco 7301 series IOS ENTERPRISE/FW/IDS IPSEC 56
S73CHK2-12112EX= Cisco 7301 series IOS ENTERPRISE/FW/IDS IPSEC 3DES
S73ACHL-12112EX= Cisco 7301 series IOS ENTERPRISE/FW/IDS IPSEC 56
S73CP-12112EX= Cisco 7300 IOS IP PLUS
S73A-12111EX= Cisco 7301 series IOS ENTERPRISE
S73AH-12111EX= Cisco 7301 series IOS ENTERPRISE/FW/IDS IPSEC 3DES
S73AHL-12111EX= Cisco 7301 series IOS ENTERPRISE/FW/IDS IPSEC 56
S73AR1P-12111EX= Cisco 7301 series IOS ENTERPRISE/FW/IDS IPSEC 56
S73CP-12111EX= Cisco 7300 IOS IP PLUS
S73A-12110EX= Cisco 7301 series IOS ENTERPRISE
S73AH-12110EX= Cisco 7301 series IOS ENTERPRISE/FW/IDS IPSEC 3DES
S73AHL-12110EX= Cisco 7301 series IOS ENTERPRISE/FW/IDS IPSEC 56
S73AR1P-12110EX= Cisco 7301 series IOS ENTERPRISE/FW/IDS IPSEC 56
S73CHK2-12110EX= Cisco 7301 series IOS ENTERPRISE/FW/IDS IPSEC 3DES
S73ACHL-12110EX= Cisco 7301 series IOS ENTERPRISE/FW/IDS IPSEC 56
S73CP-12110EX= Cisco 7300 IOS IP PLUS

Cisco 7300 Series

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Chapter 1  Routers

Cisco 7400 Series

With the Cisco 7400, this modular, one-port adapter slot unit leverages over 40 standard 7200/7500 series port adapters. Its compact, stackable architecture is designed for application specific routing deployments, such as broadband services aggregation (PPP/L2TP) and WAN edge connectivity in service provider and enterprise networks. Leveraging Cisco patented technology, the Cisco 7400 series delivers a premium suite of hardware-accelerated network services.

When to Sell

**Sell This Product**

When a Customer Needs These Features

**Cisco 7400 Series**

- General WAN edge connectivity in a small form factor, or as managed customer premise equipment (CPE)
- Broad range of connectivity options—from DS0 to OC-3 interfaces
- Comprehensive management services with remote management, provisioning, troubleshooting and software upgrade
- Hardware accelerated services, including: NAT, ACLs, Netflow, CBWFQ, CBWRED, Policing, marking, Hierarchical Traffic Shaping, & VRF lite
- One fast LAN interface (FE/GE) and one fast WAN interface (DS3/OC3)
- High volume/density of PPP, PPPoE, PPPoA, L2TP tunnel aggregation and termination for broadband services like DSL, Cable, and Wireless

**Key Features**

- Compact form factor with 1 RU, front-to-back airflow and stackability
- Hardware—accelerated IP network services
- Built-in dual GE connectivity
- Flexible WAN connectivity supporting over 40 interfaces including serial, multichannel, ISDN, Frame Relay, ATM, Packet over SONET (POS), from NxDS0 to OC-3
- Shared port adaptors with the Cisco 7200, 7300, 7500, and 7600 (with FlexWAN Module), which simplifies sparing and protects customer investment in interfaces

**Competitive Products**

- Redback: SMS500, SMS1800
- Juniper: M5, M10
- Unisphere: ERX700, ERX1400
## Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco 7401ASR-BB</th>
<th>Cisco 7401ASR-CP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Ports</td>
<td>2 Gigabit Ethernet (RJ or GBIC) ports</td>
<td>Same as 7401ASR-BB</td>
</tr>
<tr>
<td>Expansion Slots</td>
<td>1</td>
<td>Same as 7401ASR-BB</td>
</tr>
<tr>
<td>WAN Interface Range</td>
<td>DS0 to OC-3</td>
<td>Same as 7401ASR-BB</td>
</tr>
<tr>
<td>Processor</td>
<td>RM 7K RISC Processor + PAF Processor</td>
<td>Same as 7401ASR-BB</td>
</tr>
<tr>
<td>Forwarding Rate</td>
<td>Up to 350 Kpps</td>
<td>Same as 7401ASR-BB</td>
</tr>
<tr>
<td>Backplane Capacity</td>
<td>1.2 Gbps</td>
<td>Same as 7401ASR-BB</td>
</tr>
<tr>
<td>Flash PCMCIA Memory</td>
<td>64MB (expandable to 128MB)</td>
<td>Same as 7401ASR-BB</td>
</tr>
<tr>
<td>System DRAM Memory</td>
<td>128MB (expandable to 512MB)</td>
<td>Same as 7401ASR-BB</td>
</tr>
<tr>
<td>Minimum Cisco IOS Release</td>
<td>12.2(10)X</td>
<td>Same as 7401ASR-BB</td>
</tr>
<tr>
<td>Internal Power Supply</td>
<td>AC, DC-48V, DC24V, or Dual DC-48V</td>
<td>Same as 7401ASR-BB</td>
</tr>
<tr>
<td>Redundant Power Supply Support</td>
<td>Yes</td>
<td>Same as 7401ASR-BB</td>
</tr>
<tr>
<td>Chassis Height</td>
<td>1 RU</td>
<td>Same as 7401ASR-BB</td>
</tr>
<tr>
<td>Rack Mountable</td>
<td>Yes, up to 40 per rack</td>
<td>Same as 7401ASR-BB</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>1.72 x 17.3 x 11.80 in</td>
<td>Same as 7401ASR-BB</td>
</tr>
</tbody>
</table>

## Selected Part Numbers and Ordering Information

### Cisco 7400 ASR Bundles
- CISCO7401ASR-BB: Cisco 7401ASR, 256M SDRAM, Broadband Feature License
- CISCO7401ASR-CP: Cisco 7401ASR, 128M SDRAM, IP Software
- CISCO7401-2DC48: Cisco 7400 chassis with dual DC power supply
- C7400VPN/K9: Cisco 7400 VPN Router w/ VAM, VPN Device Mor, 2xFE/GE, AC PS, IPSec 3DES

### Cisco 7400 ASR Memory Options
- MEM-COM-P-FLD64M: Cisco 7400ASR Compact Flash Disk, 64 MB (spare)
- MEM-COM-P-FLD128M: Cisco 7400ASR Compact Flash Disk, 128 MB (spare)
- MEM-7404SR-256MB: 256MB Spare memory for Cisco 7400ASR/VPN
- MEM-7404SR-512MB: 512MB Spare SDRAM for Cisco 7400ASR/VPN

### Cisco 7400 ASR Transceiver Modules
- GBIC-LX/LH: Gigabit Interface Converter for 1000BASE-LX standard
- GBIC-SX: Gigabit Interface Converter for 1000BASE-SX (Short Wavelength)

### Cisco 7400 and 7500 Series Port Adapters
- PA-POS-OC3MM: 1-port OC3/STM1 Pluggable Optic Module, Multi Mode PA
- PA-MC-8E1/120: 8 port multi-channel E1 port adapter with G.703 120ohm interf
- PA-2FE-FX: 2-port Fast Ethernet 100Base FX Port Adapter

### Cisco 7200, 7400 and 7500 Series Port Adapters
- CAB-AC: AC Power Cord, US
- CAB-ACA: AC Power Cord, Australia
- CAB-ACE: AC Power Cord, Europe
- CAB-ACI: AC Power Cord, Italy
- CAB-ACR: Power Cord Argentina, Spare
- CAB-ACU: AC Power Cord, UK

### Cisco 7400 Software Options
- S74CLK9-12209YE: Cisco 7400 Series IOS IP/FW/IDS IPSec 3DES
- S74CLK-12209F1E: Cisco 7400 Series IOS IP PLUS IPSec 3DES
- S74A-1220NB: Cisco 7400 Series IOS ENTERPRISE
- S74A-12204B: Cisco 7400 Series IOS ENTERPRISE/FW/IDS
- S74AH-12204B: Cisco 7400 Series IOS ENTERPRISE/FW/IDS IPSec 3DES
- S74A-12204AI: Cisco 7400 Series IOS ENTERPRISE/SSG
- S74A-1220BA: Cisco 7400 Series IOS IP
- S74A-12202DD: Cisco 7400 Series IOS ENTERPRISE/FW/IDS
Cisco 7400 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

<table>
<thead>
<tr>
<th>Cisco 7505</th>
<th>Cisco 7507</th>
<th>Cisco 7513</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 expansion slots</td>
<td>7 expansion slots</td>
<td>13 expansion slots</td>
</tr>
<tr>
<td>One CyBus</td>
<td>Dual CyBuses</td>
<td>Dual CyBuses</td>
</tr>
<tr>
<td>DS0 to OC-12 connectivity (all platforms)</td>
<td>Redundant power supplies</td>
<td>Redundant power supplies</td>
</tr>
<tr>
<td></td>
<td>Diverse set of routing protocols (all platforms)</td>
<td>Diverse set of routing protocols (all platforms)</td>
</tr>
</tbody>
</table>

For More Information

See the Cisco 7400 Series Web site: http://www.cisco.com/go/7400
Ch 1 - Routers

Key Features

- High-performance switching—Delivers high performance for mission-critical applications by supporting high-speed media and high-density configurations; using the processing capabilities of the Versatile Interface Processors and Cisco Express Forwarding—the Cisco 7500 series system capacity can exceed two million packets per second
- Full support for Cisco IOS software and enhancements for high-performance network services—Performs network services such as quality of service, security, compression, and encryption at high speed; VIP technology extends the performance of these services through distributed IP services
- High port density—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
- Unmatched interface flexibility—The Cisco 7500 supports a broad selection of Interface Processors (IPs) and Port Adapters (PAs). Port adapters are shared with the Cisco 7200, 7400, and 7600 (with FlexWAN Module)
- High Availability—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: M5, M10, M20
- Unisphere: ERX700, ERX1400
- Huawei: NE8 and NE16

Specifications

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

### Cisco 7500 Series Products

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CISCO7505/4</td>
<td>Cisco 7505 5-Slot, 1 CyBus, 1RSP4, Single Power Supply</td>
</tr>
<tr>
<td>CISCO7505/4B-M</td>
<td>Cisco 7505 7 Slot, MIX-Enabled, Dual Bus, 2 RSP8, 2 PS</td>
</tr>
<tr>
<td>CISCO7507/4B-M</td>
<td>Cisco 7507 7 Slot, MIX-Enabled, Dual Bus, 2 RSP8, 2 PS</td>
</tr>
<tr>
<td>CISCO7507/4X2</td>
<td>Cisco 7507 7-Slot, 2 CyBus, 1RSP4, Dual Power Supply</td>
</tr>
<tr>
<td>CISCO7513/4</td>
<td>Cisco 7513 13-Slot, Dual Bus, 1RSP4, 1 PS</td>
</tr>
<tr>
<td>CISCO7513/4B-M</td>
<td>Cisco 7513 13-Slot, Dual Bus, 2 RSP8, 2 PS</td>
</tr>
<tr>
<td>CISCO7513/8-M</td>
<td>Cisco 7513, 13 Slot, MIX-Enabled, Dual Bus, 1 RSP8, 1 PS</td>
</tr>
<tr>
<td>CISCO7513/8X2-M</td>
<td>Cisco 7513, 13 Slot, MIX-Enabled, Dual Bus, 2 RSP8, 2 PS</td>
</tr>
<tr>
<td>CISCO7513/16-M</td>
<td>Cisco 7513, 13 Slot, MIX-Enabled, Dual Bus, 1 RSP16, 1 PS</td>
</tr>
<tr>
<td>CISCO7513/16X2-M</td>
<td>Cisco 7513, 13 Slot, MIX-Enabled, Dual Bus, 2 RSP16, 2 PS</td>
</tr>
</tbody>
</table>

### Cisco 7500 Series Processors and Accessories

<table>
<thead>
<tr>
<th>Processor Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSP2=</td>
<td>CISCO 7507/7513 ROUTE SWITCH PROCESSOR SPARE</td>
</tr>
<tr>
<td>RSP2/2</td>
<td>DUAL RSP2 OPTION FOR 7507 and 7513</td>
</tr>
<tr>
<td>RSP4+=</td>
<td>Cisco 7500 Series Route Switch Processor 4+ (Spare)</td>
</tr>
<tr>
<td>RSP8=</td>
<td>Cisco 7505/7507/7513/7576 Route Switch Processor (Spare)</td>
</tr>
<tr>
<td>RSP16=</td>
<td>CISCO 7500 ROUTE SWITCH PROCESSOR 16 SPARE</td>
</tr>
</tbody>
</table>

### Route Switch Processor Memory Options (RSP1 & RSP2)

<table>
<thead>
<tr>
<th>Memory Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEM-RSP-FLC8M=</td>
<td>RSP Flash Credit Card: 8 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP-16M=</td>
<td>RSP 16 MB DRAM Upgrade Kit</td>
</tr>
<tr>
<td>MEM-RSP8-64M=</td>
<td>RSP8 64MB DRAM Option</td>
</tr>
<tr>
<td>MEM-RSP8-128M=</td>
<td>RSP8 128MB DRAM Upgrade Kit</td>
</tr>
<tr>
<td>MEM-RSP8-256M=</td>
<td>RSP8 256MB DRAM Upgrade Kit</td>
</tr>
<tr>
<td>MEM-RSP8-FLC16M=</td>
<td>RSP8 Flash Card: 16 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP8-FLC20M=</td>
<td>RSP8 Flash Card: 20 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP8-FLC32M=</td>
<td>RSP8 Flash Card: 32 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP8-FLC64M=</td>
<td>RSP8 Flash Card: 64 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP8-FLC128M=</td>
<td>RSP8 Flash Card: 128 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP8-FLD48M=</td>
<td>RSP8 Flash Disk: 48 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP8-FLD128M=</td>
<td>RSP8 Flash Disk: 128 MB Kit</td>
</tr>
</tbody>
</table>

### Route Switch Processor Memory Options (RSP4)

<table>
<thead>
<tr>
<th>Memory Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEM-RSP-FSC16M=</td>
<td>RSP Flash Credit Card: 16 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP-FSC20M=</td>
<td>RSP Flash Credit Card: 20 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP-FSC32M=</td>
<td>RSP Flash Credit Card: 32 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP-FSC64M=</td>
<td>RSP Flash Credit Card: 64 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP-FSC128M=</td>
<td>RSP Flash Credit Card: 128 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP-FSC256M=</td>
<td>RSP Flash Credit Card: 256 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP-FSC512M=</td>
<td>RSP Flash Credit Card: 512 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP-FSC1G=</td>
<td>RSP Flash Credit Card: 1GB Kit</td>
</tr>
</tbody>
</table>

### Route Switch Processor Memory Options (RSP8)

<table>
<thead>
<tr>
<th>Memory Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEM-RSP-FLC16M=</td>
<td>RSP Flash Credit Card: 16 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP-FLC32M=</td>
<td>RSP Flash Credit Card: 32 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP-FLC64M=</td>
<td>RSP Flash Credit Card: 64 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP-FLC128M=</td>
<td>RSP Flash Credit Card: 128 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP8-FLC16M=</td>
<td>RSP8 Flash Credit Card: 16 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP8-FLC32M=</td>
<td>RSP8 Flash Credit Card: 32 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP8-FLC64M=</td>
<td>RSP8 Flash Credit Card: 64 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP8-FLC128M=</td>
<td>RSP8 Flash Credit Card: 128 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP8-FLD48M=</td>
<td>RSP8 Flash Disk: 48 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP8-FLD128M=</td>
<td>RSP8 Flash Disk: 128 MB Kit</td>
</tr>
</tbody>
</table>

### Route Switch Processor Memory Options (RSP16)

<table>
<thead>
<tr>
<th>Memory Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEM-RSP16-FLC16M=</td>
<td>RSP16 Flash Credit Card: 16 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP16-FLC20M=</td>
<td>RSP16 Flash Credit Card: 20 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP16-FLC32M=</td>
<td>RSP16 Flash Credit Card: 32 MB Kit</td>
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<tr>
<td>MEM-RSP16-FLC64M=</td>
<td>RSP16 Flash Credit Card: 64 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP16-FLC128M=</td>
<td>RSP16 Flash Credit Card: 128 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP16-FLD48M=</td>
<td>RSP16 Flash Disk: 48 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP16-FLD128M=</td>
<td>RSP16 Flash Disk: 128 MB Kit</td>
</tr>
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### Route Switch Processor Memory Options (RSP16)

<table>
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<tbody>
<tr>
<td>MEM-RSP16-FLD48M=</td>
<td>RSP16 Flash Disk: 48 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP16-FLD128M=</td>
<td>RSP16 Flash Disk: 128 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP16-FLC16M=</td>
<td>RSP16 Flash Credit Card: 16 MB Kit</td>
</tr>
<tr>
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<td>RSP16 Flash Credit Card: 128 MB Kit</td>
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<td>RSP16 Flash Disk: 128 MB Kit</td>
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<td>RSP16 Flash Credit Card: 16 MB Kit</td>
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<td>RSP16 Flash Disk: 128 MB Kit</td>
</tr>
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</tr>
<tr>
<td>MEM-RSP16-FLC20M=</td>
<td>RSP16 Flash Credit Card: 20 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP16-FLC32M=</td>
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</tr>
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<td>MEM-RSP16-FLC64M=</td>
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</tr>
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<td>MEM-RSP16-FLC128M=</td>
<td>RSP16 Flash Credit Card: 128 MB Kit</td>
</tr>
<tr>
<td>MEM-RSP16-FLD48M=</td>
<td>RSP16 Flash Disk: 48 MB Kit</td>
</tr>
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<td>RSP16 Flash Disk: 128 MB Kit</td>
</tr>
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</table>

### Route Switch Processor Memory Options (RSP16)

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<tr>
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</tr>
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</tr>
<tr>
<td>MEM-RSP16-FLD128M=</td>
<td>RSP16 Flash Disk: 128 MB Kit</td>
</tr>
</tbody>
</table>

### Gigabit Ethernet Interface Processor

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

---

1. Selected Part Numbers and Ordering Information
Cisco 7500 Series Interface Processors

**CX-CIP2-EC1**: CHANNEL IP:CIP2 W/ ECA-1 PORT

**CX-CIP2-EC2**: CHANNEL IP:CIP2 W/ ECA-2 PORTS

**FEIP2-D5W-2TX**: 2-Port Fast Ethernet IP with Dist. Switching (100TX)

**FEIP2-D5W-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-2M ODEL 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

Cisco 7500 Series Transceiver Modules

**GBIC-SX**: Gigabit Intf. Converter For 1000BASE-SX (Short Wavelength)

**GBIC-LX**: Gigabit Interface Converter For 1000BASE-LX standard

**GBIC-ZX**: Gigabit Interface Converter for 1000 BASE-ZX

**POM-OC3-MM**: 1-port OC3/STM1 Pluggable Optic Module, MM

**POM-OC3-SMIR**: 1-port OC3/STM1 Pluggable Optic Module, SM-IR

Cisco 7500 VIP2 Memory Options

**MEM-VIP2-40-32M**: 32 MB DRAM Option for VIP2-40 (Default)

**MEM-VIP2-40-64M**: 64 MB DRAM Option for VIP2-40 (Spare)

**MEM-V240-64-10PK**: 64 MB byte DRAM Upgrade for VIP2-40 (10-pack)

**MEM-V250-128-10PK**: 128 M byte DRAM Upgrade for VIP2-50/xIP-50 (10-pack)

**MEM-VIP2-250-32M**: 32 MbytesDRAM Option for VIP2-50/xIP-50 (default)

**MEM-VIP2-250-64M**: 64 MbytesDRAM Option for VIP2-50/xIP-50

**MEM-VIP2-250-128M**: 128 MbytesDRAM Option for VIP2-50/xIP-50

**MEM-VIP2-250-6M**: 4 Mbytes SRAM Option for VIP2-50/xIP-50 (default)

**MEM-VIP2-250-8M**: 8 Mbytes SRAM Option for VIP2-50/xIP-50

Cisco 7500 VIP4 Memory Options

**MEM-VIP4-64M-SD**: 64 MB SDRAM Option for VIP4 (Spare)

**MEM-VIP4-128M-SD**: 128 MB SDRAM Option for VIP4

**MEM-VIP4-256M-SD**: 256 MB SDRAM Option for VIP4

Cisco 7500 VIP6 Memory Options

**MEM-VIP6-64M-SD**: 64 MB SDRAM Option for VIP6 (Spare)

**MEM-VIP6-128M-SD**: 128 MB SDRAM Option for VIP6

**MEM-VIP6-256M-SD**: 256 MB SDRAM Option for VIP6

Cisco 7500 Series Memory Upgrades

**VIP2-10/15FE2-UPG**: DRAM MEM Upgrade for VIP2-10, VIP2-15, CX-FEIP2-2TX AND -2FX

**VIP2-10/15FE2-UPG**: DRAM MEM Upgrade for VIP2-10, VIP2-15, CX-FEIP2-2TX AND -2FX

Cisco 7500 Series Port Adapters

**PA-A3-OC12M**: 1 Port ATM Enhanced OC12/STM4 single mode intermediate reach

**PA-A3-OC12M**: 1 Port ATM Enhanced OC12/STM4 multi-mode

**PA-A1-OC3M**: 1 Port ATM OC3 Single Mode Interim Reach Port Adapter

**PA-A1-OC3M**: 1 Port ATM OC3 Multi Mode Port Adapter

**GEP**: Enhanced Gigabit Ethernet

Cisco 7200, 7400 and 7500 Series Port Adapters

**Cisco 7400 and 7500 Series Port Adapters**

**Cisco 7500 Service Adapters**

**SA-ENCRYPT**: Encryption Service Adapter - Spare
Cisco 7500 Series CIP Options and Accessories

MEM-CIP-8M = 8 MB Memory, Replaces Existing CIP Memory, Total 8 MB
MEM-CIP-32M = CIP 32 MB DRAM Upgrade Kit
MEM-CIP-64M = CIP 64 MB DRAM Upgrade Kit
MEM-CIP-128M = CIP 128 MB DRAM Upgrade Kit
FR-CIP-CPN+ = CP/CN SUPPORT FEATURE FOR CIP
FR-CIP-TCPOFF = TCP/IP OFFLOAD FEATURE FOR CIP
FR-CIP-TN3270S-M = TN3270 Server - Mid-tier 5000 Session Support SSL
FR-CIP-TN3270S-US = TN3270 Server Upgrade 5,000 Sessions To SSL
FR-CIP-TN3270S-U = TN3270 Server Upgrade Unlimited Sessions To SSL
FR-CIP-TN3270S-UM = TN3270 Server Upgrade From 2,000 Sessions To 5,000 SSL
FR-CIP-TN3270S-UMS = TN3270 Server Upgrade From 5,000 Sessions To Unlimited SSL
FR-CIP-TN3270S-G = CIP1:TN3270 Server Upgrade, Limited to Unlimited Version
FR-CIP-TN3270S-M = TN3270 Server - Mid-tier 5000 session support
FR-CIP-TN3270S-U = TN3270 Server - Unlimited 5000 Session Support
FR-CIP-TN3270S-US = TN3270 Server Upgrade Unlimited Sessions To SSL
FR-CIP-TN3270S-UMS = TN3270 Server Upgrade From 2,000 Sessions To 5,000 SSL
FR-CIP-TN3270S-UMS = TN3270 Server Upgrade From 5,000 Sessions To Unlimited SSL
FR-CIP-SNASWITCH = TN3270 Server - SNA Session Switch Feature
FR-CIP-ASSIST TCP Assist Feature on CIP for host using Cisco IOS for S/390
NetFlow Utility Software
NDA-HPUX-3.X-UPG Upgrade To Analyzer 3.6 For HP U/X Incl NFC 3.5
NDA-HPUX-3.X-UPE Upgrade To Analyzer 3.6 For Solaris Incl NFC 3.5
NDA-HPUX-3.X-UPE Upgrade To Analyzer 3.6 For HP U/X Incl NFC 3.5
Cisco 7500 RSP Feature Licenses
FR-WPP75= Cisco IOS RSPx Series WAN Packet Protocols/Netflow License
FR-IR75= Cisco IOS RSP Series InterDomain Routing License
FR75-AN2= Cisco IOS 7500 Series DBConn
Cisco 7500 Series IOS Feature Licenses
FR75-APPN= Cisco IOS RSPx Series APPN Upgrade
FR75-C-DS= Cisco IOS RSPx Series IP to IP/IPX/IBM
FR75-C-BS= Cisco IOS RSPx Series IP to Desktop/IBM
FR75-C-A= Cisco IOS RSPx Series IP to Enterprise
FR75-BS-BS= Cisco IOS RSPx Series IP/IXP/IPX/IBM to Desktop/IBM
FR75-BS-A= Cisco IOS RSPx Series IP to Desktop/IBM
FR75-40= Cisco IOS RSPx Encryption 40 Upgrade
FR75-56= Cisco IOS RSPx Encryption 56 Upgrade
FL75-H= Cisco IOS 7500 Series Firewall/IDS Upgrade
FL75-KIB= Cisco IOS 7500 Series IPSEC 3DES Upgrade
FL75-L= Cisco IOS 7500 Series IPSEC 56 Upgrade
FL75-R1= Cisco IOS 7500 Series SNASwitch Upgrade
FL75-N-FA= Cisco IOS 7500 Series APPN to SNASwitch Upgrade
FR-ITP-HSL = IP Transfer Point (ITP) High Speed Link (HSL) License
Cisco 7500 Series IOS Feature Set Upgrades
FR-ITP-M3UA/SUA = IP Transfer Point M3UA/SUA Functionality License
FR-ITP-M2PA = IP Transfer Point M2PA Functionality License
PA-MC-BTE1 = 8 port multichannel T1/E1 BRI port adapter
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.
2. Cisco 7200, 7400 and 7500 share many port adapters. Please see Cisco 7200, 7400 and 7500 Series Port Adapters, page 1-34 for additional part numbers.
3. Cisco 7400 and 7500 share many port adapters. Please see Cisco 7400 and 7500 Series Port Adapters, page 1-43 for additional part numbers.

For More Information
See the Cisco 7500 Series Web site: http://www.cisco.com/go/7500

Cisco 7500 Series
Cisco 7600 Series

The Cisco 7600 Series combines optical WAN/MAN networking and high-volume Ethernet aggregation with a focus on line-rate delivery of high-touch IP services in large data centers and at the edge of service provider networks. It provides customers the flexibility of three different form factors: Cisco 7603, 7606, and 7609. As the most scalable system in the industry, each router offers the ability to deliver DS0 to OC-48 WAN connectivity, and 10-Mbps Ethernet to 10-Gigabit Ethernet LAN connectivity into Internet data center, metropolitan aggregation, WAN edge aggregation, and enterprise networking applications.

When to Sell

<table>
<thead>
<tr>
<th>Sell This Product</th>
<th>When a Customer Needs These Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco 7603</td>
<td>• 3 slot (horizontal) chassis</td>
</tr>
<tr>
<td></td>
<td>• 32 Gbps backplane bandwidth</td>
</tr>
<tr>
<td></td>
<td>• 15 Mpps forwarding rate</td>
</tr>
<tr>
<td></td>
<td>• NEBs Compliant</td>
</tr>
<tr>
<td>Cisco 7606</td>
<td>• 6 slot (horizontal) chassis</td>
</tr>
<tr>
<td></td>
<td>• 160 Gbps backplane bandwidth</td>
</tr>
<tr>
<td></td>
<td>• 30 Mpps forwarding rate</td>
</tr>
<tr>
<td></td>
<td>• NEBs Compliant</td>
</tr>
<tr>
<td>Cisco 7609</td>
<td>• 9 slot (vertical) chassis</td>
</tr>
<tr>
<td></td>
<td>• 256 Gbps backplane bandwidth</td>
</tr>
<tr>
<td></td>
<td>• 30 Mpps forwarding rate</td>
</tr>
<tr>
<td></td>
<td>• NEBs Compliant</td>
</tr>
</tbody>
</table>

Key Features

• Hardware accelerated IP services on each Optical Services Module (OSM), delivering up to 6 Mpps per slot
• 15 to 30 Mpps forwarding processor and up to 512 MB DRAM for Internet routing
• Modular and scalable from 32 Gbps to 256 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 10 Mbps Ethernet to 1 Gbps

Competitive Products

• Redback: SMS-500, SMS-1800
• Juniper: M5, M10, M20, M40
• Unisphere: ERX100, ERX1400
• Extreme: Black Diamond 6808
## Specifications

### Feature |Cisco 7603 |Cisco 7606 |Cisco 7609 |
---|---|---|---|
**Fixed Ports** |None |Same as Cisco 7603 |Same as Cisco 7603 |
**Expansion Slots** |3 (horizontal) |6 (horizontal) |9 (vertical) |
**WAN Interface Range** |DS0 to OC-48 |Same as Cisco 7603 |Same as Cisco 7603 |
**Processor** |Supervisor Engine 2 w/MSFC2 |Same as Cisco 7603 |Same as Cisco 7603 |
**Forwarding Rate** |Up to 15 Mpps |Up to 30 Mpps |Up to 30 Mpps |
**Backplane Capacity** |32 Gbps |160 Gbps |256 Gbps |
**Flash PCMCIA Memory** |16MB (expandable to 24MB) |Same as Cisco 7603 |Same as Cisco 7603 |
**System DRAM Memory** |128MB (expandable to 512MB) |Same as Cisco 7603 |Same as Cisco 7603 |
**Minimum Cisco IOS Release** |12.1(8)AE3 |Same as Cisco 7603 |12.1(8)(A)EX |
**Internal Power Supply** |AC or DC (1000 W) |AC or DC (1000 W) |AC or DC (1300 or 2500 W) |
**Redundant Power Supply Support** |Yes |Same as Cisco 7603 |Same as Cisco 7603 |
**Chassis Height** |4 RU |7 RU |20 RU |
**Rack Mountable** |Yes, up to 10 per rack |Yes, up to 6 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. |25.2 x 17.2 x 18.1 in. |

### Selected Part Numbers and Ordering Information

**Cisco 7600 Systems**

- CISCO7609 7609 Chassis Bundles
- 7609-AC-BUN Enhanced 7609 Chassis, SUP2/MFSC2, 4000W AC P/S, 512M B DRAM
- 7609-DC-BUN 2500W DC P/S, 512M B DRAM
- OSM-7609-AC 7609 Chassis, SUP2/MFSC2, 2500W AC P/S, 512 M B DRAM
- OSM-7609-DC 7609 Chassis, SUP2/MFSC2, 2500W DC P/S, 512 M B DRAM

**Cisco 7606 Systems**

- CISCO7606Cisco 7606 Chassis Bundle
- 7606-AC-BUN 7606 Chassis, SUP2/MFSC2, 1900W AC P/S, PEM, 256M B DRAM
- 7606-DC-BUN 7606 Chassis, SUP2/MFSC2, 1900W DC P/S, PEM, 256M B DRAM

**Cisco 7603 Systems**

- CISCO7603Cisco 7603 Chassis Bundle
- 7603-AC-BUN 7603 Chassis, SUP2/MFSC2, 950W AC P/S, PEM, 256M B DRAM
- 7603-DC-BUN 7603 Chassis, SUP2/MFSC2, 950W DC P/S, PEM, 256M B DRAM

**Cisco 7600 Optical Services Modules (OSMs)**

- OSM-1CHOC12/TI5= 1-port CHOC-12/STM-1 SONET/SDH OSM, SM-IR, with 4 GE
- OSM-1CHOC12/TI7= 1-port CHOC-12/STM-1 SONET/SDH OSM, SM-IR, with 4 GE
- OSM-1OC48-P-O= 1-port STM-16 SONET/SDH OSM, SM-SR, with 4 GE
- OSM-1OC48-P-SL= 1-port STM-16 SONET/SDH OSM, SM-LR, with 4 GE
- OSM-2OC12-ATM-MM= 2-port OC-12 STM-4 ATM OSM M M, with 4 GE
- OSM-2OC12-ATM-SI= 2-port OC-12 STM-4 ATM OSM M I, with 4 GE
- OSM-2OC12-POS-MM= 2-port OC-12 STM-4 POS/SONET/SDH OSM M M, with 4 GE
- OSM-2OC12-POS-SI= 2-port OC-12 STM-4 POS/SONET/SDH OSM M I, with 4 GE
- OSM-2OC12-POS-SL= 2-port OC-12 STM-4 POS/SONET/SDH OSM M L, with 4 GE
- OSM-4GE-WAN-GBC= 4-port Gigabit Ethernet Optical Services Module, GBC
- OSM-4OC3-P-O= 4-port OC-3 STS-3 POS/SONET/SDH OSM, M M, with 4 GE
- OSM-4OC3-P-SL= 4-port OC-3 STS-3 POS/SONET/SDH OSM, SM-L, with 4 GE
- OSM-8OC3-P-O= 8-port OC-3 STS-3 POS/SONET/SDH OSM, M M, with 4 GE
- OSM-8OC3-P-SL= 8-port OC-3 STS-3 POS/SONET/SDH OSM, SM-L, with 4 GE
- OSM-8OC3-P-SL= 8-port OC-3 STS-3 POS/SONET/SDH OSM, SM-L, with 4 GE
For More Information

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

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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 10000

- Broadband features including PPP over ATM, PPP over Ethernet, routed bridge encapsulation, and Layer 2 Tunneling Protocol
- 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.
- Lowest total cost of ownership—the Cisco 10000 offers the highest leased-line, ATM, frame, and broadband session densities on a single platform, and its high reliability reduces network downtime and operational expenses
- Broad portfolio of line-rate IP sessions—critical service features, such as QoS, MPLS, Multilink PPP, and ACLs are hardware accelerated to deliver exceptional throughput for every connection
• Industry-leading session density—the Cisco 10000 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

**Competitive Products**

- Redback: SMS-10000
- Juniper: M5, M10, M20
- Unisphere: ERX700, ERX1400

**Specifications**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco 10008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Ports</td>
<td>None</td>
</tr>
<tr>
<td>Expansion Slots</td>
<td>8 (for interfaces)</td>
</tr>
<tr>
<td>WAN Interface Range</td>
<td>10G to OC-12</td>
</tr>
<tr>
<td>Processor</td>
<td>Cisco PXF Processor</td>
</tr>
<tr>
<td>Forwarding Rate</td>
<td>1000Mpps to approximately 6 Mpps</td>
</tr>
<tr>
<td>Backplane Capacity</td>
<td>512 Gbps</td>
</tr>
<tr>
<td>Flash PCMCIA Memory</td>
<td>48 M B (expandable to 128 M B)</td>
</tr>
<tr>
<td>System DRAM Memory</td>
<td>512 M B</td>
</tr>
<tr>
<td>Minimum Cisco IOS Release</td>
<td>12.0(9)SL</td>
</tr>
<tr>
<td>Internal Power Supply</td>
<td>AC or DC, dual option</td>
</tr>
<tr>
<td>Redundant Power Supply</td>
<td>yes, for both AC and DC</td>
</tr>
<tr>
<td>Chassis Height</td>
<td>13 RU</td>
</tr>
<tr>
<td>Rack Mountable</td>
<td>yes, up to 3 per rack</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>21.75 x 17.5 x 12 in.</td>
</tr>
</tbody>
</table>

**Selected Part Numbers and Ordering Information**

**Cisco 10008 Pricing Bundles**

- ESR10008-1P1AC  C10000 8-slot chassis, 1 PRE, 1 AC PEM
- ESR10008-1P1AC+6  C10000 8-slot chassis, 1 PRE, 1 AC PEM, 1 CT3 module
- ESR10008-1P1DC  C10000 8-slot chassis, 1 PRE, 1 DC PEM
- ESR10008-1P1DC+6  C10000 8-slot chassis, 1 PRE, 1 DC PEM, 1 CT3 module
- ESR10008-1P1AC+4CH  C10000 8-slot chassis, 1 PRE, 1 AC 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
- ESR10008-1P1DC-SK  ESR10008 BBA Starter Kit with PRE1, DC, 4-port OCL, GE

**Cisco 10005 Pricing Bundles**

- ESR10005-1P1AC  C10000 5-slot chassis, 1 PRE, 1 AC PEM
- ESR10005-1P1DC  C10000 5-slot chassis, 1 PRE, 1 DC PEM
- ESR10005-1P1AC+6  C10000 5-slot chassis, 1 PRE, 1 AC PEM, 1 CT3 Module
- ESR10005-1P1DC+6  C10000 5-slot chassis, 1 PRE, 1 DC PEM, 1 CT3 Module
- ESR10005-1P1AC+4CH  C10000 5-slot chassis, 1 PRE, 1 AC PEM, 1 CH STM-1 Module
- ESR10005-2P2AC  C10000 5-slot chassis, 2 PREs, 2 AC PEMs
- ESR10005-2P2AC+6  C10000 5-slot chassis, 2 PREs, 2 AC PEMs, 1 CT3 Module
- ESR10005-2P2DC  C10000 5-slot chassis, 2 PREs, 2 DC PEMs
- ESR10005-2P2DC+6  C10000 5-slot chassis, 2 PREs, 2 DC PEMs, 1 CT3 Module
- ESR10005-CHAS=  C10000 5-SLOT CHASSIS, INCL. 5xDS3 EXT CRD, ALM CRD, BWR, SPARE
- ESR-PRE1  Performance Routing Engine, 512 DRAM and 32M Flash
Cisco 10000 Series

Cisco 10720 Series

Chapter 1 Routers

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. Equipped with Ethernet technology for customer access and the innovative Dynamic Packet Transport (DPT)/RPR (Resilient Packet Ring) technology or Packet over SONET (POS) for metro optical connectivity, the Cisco 10720 allows service providers to offer IP services closer to the user, enabling them to better control admission to network resources. This allows service providers to bypass traditional DS1 and DS3 access options. The dual counter rotating ring technology of DPT is also cost effective, since it uses both rings and can be deployed over dark fiber and still maintain the less than 50ms restoration common in SONET/SDH systems. For multiservice applications, DPT can also be deployed over traditional SONET/SDH ADMs and wavelength division multiplexing (WDM) systems.

The Cisco 10720 is a cost-effective, reliable platform that not only supports the full suite of IP routing protocols such as IS-IS, OSPF and BGP, but also allows advanced IP features to be introduced efficiently, without compromising on performance. Although primarily designed for high-speed Internet services for multitenant and business-park applications in the metro, the Cisco 10720 Internet Router is also suitable for a range of other applications such as: Internet data center applications, intra-POP aggregation, cable multisystem operator (MSO) internetworking, and voice-over-IP (VoIP) aggregation.

Cisco 10720 Series

Cisco 10000 Series Memory Options

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESR-PRE-MEM-FD48</td>
<td>C10000 PRE 48M Flash Disk (default)</td>
</tr>
<tr>
<td>ESR-PRE-MEM-FD128</td>
<td>C10000 PRE 128M Flash Disk option</td>
</tr>
<tr>
<td>ESR10005-PWR-AC</td>
<td>AC Power Entry Module</td>
</tr>
<tr>
<td>ESR10005-PWR-DC</td>
<td>DC Power Entry Module</td>
</tr>
<tr>
<td>ESR-PWR-DC</td>
<td>DC POWER ENTRY MODULE FOR ESR10008</td>
</tr>
<tr>
<td>ESR-PWR-AC</td>
<td>AC Power entry module for ESR10008</td>
</tr>
<tr>
<td>ESR-PWR-AC/R</td>
<td>Redundant AC power entry module for ESR10008, spare</td>
</tr>
<tr>
<td>ESR10005-PWR-AC=</td>
<td>AC POWER ENTRY MODULE, SPARE</td>
</tr>
<tr>
<td>ESR10005-PWR-AC/R</td>
<td>Redundant AC Power Entry Module</td>
</tr>
<tr>
<td>ESR10005-PWR-DC/R</td>
<td>Redundant DC Power Entry Module</td>
</tr>
<tr>
<td>CAB-DS-ACE</td>
<td>Power Cables for AC Power Option, European</td>
</tr>
<tr>
<td>CAB-DS-ACI</td>
<td>Power Cables for AC Power Option, Italian</td>
</tr>
<tr>
<td>CAB-DS-ACI/TLK</td>
<td>Power Cables for AC Power Option, Japan</td>
</tr>
<tr>
<td>CAB-DS-ACU</td>
<td>Power Cables for AC Power Option, UK</td>
</tr>
<tr>
<td>CAB-DS-ACI</td>
<td>Power Cables for AC Power Option, US</td>
</tr>
<tr>
<td>ESR-2ACT-1E1</td>
<td>24port Channelized E1/T1 Line Card</td>
</tr>
<tr>
<td>ESR-8ACT-1E1</td>
<td>8port Channelized E1/T1 Line Card</td>
</tr>
<tr>
<td>ESR-6CT3</td>
<td>6port Channelized T3 Line Card</td>
</tr>
<tr>
<td>ESR-1GE</td>
<td>1 port Gigabit Ethernet line card (requires a GBIC)</td>
</tr>
<tr>
<td>ESR-GBIC-SX</td>
<td>100base-SX GBIC, multimode, standardized for ESR</td>
</tr>
<tr>
<td>ESR-GBIC-LHW</td>
<td>100base-LH GBIC, singlemode, standardized for ESR</td>
</tr>
<tr>
<td>ESR-GBIC-ZX</td>
<td>100base-ZX GBIC, singlemode, standardized for ESR</td>
</tr>
<tr>
<td>ESR-4C3ATM-SM</td>
<td>4 Port OC3ST53c/STM3c ATM Line Card, single mode</td>
</tr>
<tr>
<td>ESR-1C3C12-SM1</td>
<td>1 port C3C12 (ST12/STM12) line card, single mode intermed. reach</td>
</tr>
<tr>
<td>ESR-1C3C12P-SM1</td>
<td>1 port C3C12P (ST12P/STM12P) line card, Single Mode</td>
</tr>
<tr>
<td>ESR-1OC12M-SM</td>
<td>1 port OC12/STM4 ATM Line Card, Single Mode</td>
</tr>
</tbody>
</table>

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.
Chapter 1  Routers

When to Sell

Sell This Product  When a Customer Needs These Features
Cisco 10720 Internet Router

• Any service provider planning to offer high-performance IP services as part of their business strategy by extending IP further out into the network
• Any service provider wanting to simplify their current network and implement the 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
• Equipped with Redundant Power Supply by default
• SRP specific 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)
• 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

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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco 10720</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security Features</td>
<td>Including AAA, RADIUS authentication, TACACS+, and encrypted passwords</td>
</tr>
</tbody>
</table>
| 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 SCP  
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/STM-16c 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/STM-16c 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.  
• 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 Pluggable (SFP) optics available in SX 550m and LH 10km 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) |

Cisco 10720 Series
Chapter 1 Routers

Selected Part Numbers and Ordering Information

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 10Gbps Ethernet Access Module—RJ 45 connectors
- 10720-FE-FX-MM: 12-port 10Gbps Single mode Fiber Ethernet Access Module 15km—MTRJ connectors
- 10720-GE-FE-TX: 4-port 10Gbps SFP GE with 4 ports of 10/100 Ethernet TX-RJ 45
- 10720-SR-LC: OC-48/STM-16c SRP Short Reach (2km) Uplink Module—LC connectors
- 10720-LR1-LC: OC-48/STM-16c SRP Long Reach 1 (40km) Uplink Module—LC
- 10720-LR2-LC: OC-48/STM-16c SRP Long Reach 2 (80km) Uplink Module—LC connectors
- 10720-LR1-LC-POS: OC-48/STM-16c SRP Long Reach 1 (40km) POS Uplink Module—LC
- 10720-LR2-LC-POS: OC-48/STM-16c SRP Long Reach 2 (80km) POS Uplink Module—LC 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.

For More Information

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

Cisco 12000 Series

The Cisco 12000 Series Internet Router is part of Cisco’s family of multimillion packets-per-second (mpps) IP and MPLS routing platforms for building profitable networks in today’s communications economy. The Cisco 12000 Series is the premier high-end routing platform for service provider backbone and edge applications, enabling service providers to meet the challenge of building packet networks to satisfy services demand while increasing profitability. The Cisco 12000 Series offers the only portfolio of 10 Gbps per slot systems and interfaces (including Packet over SONET [POS], Dynamic Packet Transport/Resilient Packet Ring [DPT/RPR], and Gigabit Ethernet [GbE]), delivering 10G economies of scale anywhere in the network. The Cisco 12000 Series provides the highest reliability, the richest set of service enablers, the lowest total cost of ownership, and the only proven investment protection, including systems that can be upgraded in the field to increase switching capacity. This innovative combination of features and capabilities enables service providers to build the most competitive IP and MPLS networks.
When to Sell

Sell This Product

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-12c/STM-4c
- 4 T1G 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, 1 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/MFS

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-1c
- 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
- Proven investment protection, offering full forward compatibility for all line cards, and the only high-end system with a modular, replaceable switch fabric for field-installed capacity upgrades
- Only fully distributed system architecture scales to the edge, supporting backbone- or edge-optimized line cards in the same chassis
- Only platform that maximizes the value of line-rate edge applications with 10G uplinks. By deploying Cisco 12000 Series IP Services Engine (ISE) line cards in Cisco 12400 Internet Routers, Service Providers benefit from line cards optimized for edge applications, while removing the bandwidth bottleneck with full 10 Gbps uplinks using cost-effective VSR optics or 10 GbE for intra-POP connections.
- The only complete priority packet delivery solution set
- Industry’s only complete IP QoS and congestion control implementation that uniquely enables premium 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
- High availability features such as 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 on the Cisco 12000 Series. Coupled with OIR, the faulty route processor can be replaced without affecting operation
- Designed for NEBS compliance to meet service provider carrier-class requirements
## Competitive Products

* • Juniper: T640, M 160, M 40E, M 40, and M 20
• Avici: Stackable Switch Router (SSR)

### Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco 12008</th>
<th>Cisco 12012</th>
<th>Cisco 12016</th>
<th>Cisco 12404</th>
<th>Cisco 12406</th>
<th>Cisco 12410</th>
<th>Cisco 12416</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switching Capacity</td>
<td>40 Gbps</td>
<td>60 Gbps</td>
<td>80 Gbps</td>
<td>80 Gbps</td>
<td>120 Gbps</td>
<td>200 Gbps</td>
<td>320 Gbps</td>
</tr>
<tr>
<td>Capacity per slot (full duplex)</td>
<td>2.5 Gbps</td>
<td>2.5 Gbps</td>
<td>2.5 Gbps</td>
<td>10 Gbps</td>
<td>10 Gbps</td>
<td>10 Gbps</td>
<td>10 Gbps</td>
</tr>
<tr>
<td>Chassis Size</td>
<td>1/4 Rack</td>
<td>Full Rack</td>
<td>Full Rack</td>
<td>1/8 Rack</td>
<td>1/4 Rack</td>
<td>1/2 Rack</td>
<td>Full Rack</td>
</tr>
<tr>
<td>Chassis Slots</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>4</td>
<td>6</td>
<td>10</td>
<td>16</td>
</tr>
</tbody>
</table>

### Supported Line Cards

- All Cisco 12000 Series 2.5 Gbps line cards
- See Part Numbers and Ordering Information

### Supported Protocols

- IPv4, MPLS, BGPv4, IS-IS, OSPFv2, EIGRP, RIP v2, IGMP
- CLI, SNMP, Cisco 12000 Manager

### Dimensions

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

#### Cisco 12000 Series of Gigabit Switch Routers (GSR)

<table>
<thead>
<tr>
<th>Model</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSR6/120-AC</td>
<td>GRP-6/120A-AC</td>
<td>Cisco 12008 GSR 60 Gbps; 1GRP, 2CSC, 3SFC, 2 Alarm, 1AC Power Supply</td>
</tr>
<tr>
<td>GSR6/120-DC</td>
<td>GRP-6/120A-DC</td>
<td>Cisco 12008 GSR 60 Gbps; 1GRP, 2CSC, 3SFC, 2 Alarm, 1DC Power Supply</td>
</tr>
<tr>
<td>GSR8/40</td>
<td>GRP-8/40A</td>
<td>Cisco 12008 GSR 40 Gbps; 1GRP, 1CSC, 3SFC, 1 Alarm, 1AC Power Supply</td>
</tr>
<tr>
<td>GSR10/200-AC</td>
<td>GRP-10/200A-AC</td>
<td>Cisco 12012 GSR 200 Gbps; 1GRP, 2CSC, 3SFC, 2 Alarm, 2AC</td>
</tr>
<tr>
<td>GSR10/200-DC</td>
<td>GRP-10/200A-DC</td>
<td>Cisco 12012 GSR 200 Gbps; 1GRP, 2CSC, 5SFC, 2 Alarm, 2DC</td>
</tr>
<tr>
<td>GSR12/60</td>
<td>GRP-12/60A</td>
<td>Cisco 12016 GSR 60 Gbps; 1GRP, 2CSC, 3SFC, 1DC Power Supply</td>
</tr>
<tr>
<td>GSR16/80-AC</td>
<td>GRP-16/80A-AC</td>
<td>Cisco 12016 GSR 80 Gbps; 1GRP, 2CSC, 3SFC, 2Alarm, 3AC, 2 Rails</td>
</tr>
<tr>
<td>GSR16/80-AC4-8R</td>
<td>GRP-16/80A-AC4-8R</td>
<td>Same As GSR16/80-AC-8R But W/ 4AC And Requires 8 Foot Rack</td>
</tr>
<tr>
<td>GSR16/80-DC</td>
<td>GRP-16/80A-DC</td>
<td>Cisco 12016 GSR 80 Gbps; 1GRP, 2CSC, 3SFC, 2Alarm, 4DC, 4 Rails</td>
</tr>
<tr>
<td>GSR16/320-AC</td>
<td>GRP-16/320A-AC</td>
<td>Cisco 12016 GSR 320 Gbps; 1GRP, 2CSC, 3SFC, 2Alarm, 3AC, 4 Rails</td>
</tr>
<tr>
<td>GSR16/320-AC4</td>
<td>GRP-16/320A-AC4</td>
<td>Same As GSR16/320-AC-4 But W/ 4AC And Requires 4 Foot Rack</td>
</tr>
<tr>
<td>GSR16/320-DC</td>
<td>GRP-16/320A-DC</td>
<td>Cisco 12016 GSR 320 Gbps; 1GRP, 2CSC, 3SFC, 2Alarm, 4DC, 4 Rails</td>
</tr>
</tbody>
</table>

#### Cisco 12000 Series Processors

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
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<tbody>
<tr>
<td>GRP-R</td>
<td>Route Processor, 12MB RAM</td>
</tr>
<tr>
<td>GRP-2/R</td>
<td>GRP Route Processor, Redundant Option</td>
</tr>
<tr>
<td>PRP-1</td>
<td>Cisco 12000 Series Performance Route Processor</td>
</tr>
<tr>
<td>PRP-1/L</td>
<td>Redundant PRP-1 chassis upgrade option, factory only</td>
</tr>
</tbody>
</table>
Cisco 12000 Series Line Cards

- **LC-4OC3/POS-M/M**: 4port OC3/STM 1 Packet Over SONET/SDH Line Card, Multi-Mode
- **LC-1OC12/POS-SM**: 1port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **LC-1OC12/ATM-SM**: 1port OC12/STM 4 ATM Line Card, Single-Mode
- **LC-1OC12/POS-M/M**: 1port OC12/STM 4 Packet Over SONET/SDH Line Card, Multi-Mode
- **CHO48DS3-5R-SC**: 1 port channelized OC-48 to DS3
- **2CHOC3/STM 1-IR-SC**: Channelized OC3/STM 1 -> DS3/E1, 2 ports Intermediate Reach
- **4CHOC12/POS 3-SCB**: 4 PORT CHANNELIZED OC12 3B
- **4OC3/ATM-IR-SC**: 4 port OC3/STM 1 ATM Line Card Intermediate reach
- **4OC3/ATM-M/M-SC**: 4 port OC3/STM 1 multimode ATM line card
- **4OC3/POS-MM**: 4port OC-3/STM 1 SONET/SDH Long Reach LC with MTRJ conn
- **4OC3/POS-MM**: 4port OC-3/STM 1 SONET/SDH Long Reach LC with SC connector
- **4OC12/ATM-MM-SC**: 4 port OC-12/STM 4 ATM Line Card Intermediate Reach
- **4OC12/POS-MM**: 4port OC-12/STM 4 Packet Over SONET/SDH Line Card, Multi-Mode
- **4OC12X/POS-M-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Multi-Mode
- **4OC12X/POS-I-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-IR-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Multi-Mode
- **4OC12/POS-M-M-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Multi-Mode
- **4OC12/POS-IR-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
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- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
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- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
- **4OC12/POS-MM-SC-B**: 4-port OC12/STM 4 Packet Over SONET/SDH Line Card, Single-Mode
The Cisco SN 5400 Series implements the iSCSI protocol to extend access of a Fibre Channel fabric and attached storage devices to IP servers. iSCSI (internet SCSI) combines the benefits of the TCP/IP protocol suite with SCSI, the universal standard for storage access. By utilizing iSCSI, the SN 5400 Series extends a Fibre Channel storage network to lower priced/lower performance servers in a data center and departmental servers located throughout the campus and enterprise. With the SN 5428, access to a Fibre Channel Storage Area Network (SAN) from anywhere on an IP network is as easy as accessing direct attached storage.

Sell This Product When a Customer Needs These Features

Cisco SN 5428

- When a customer is moving from a DAS (Direct Attached Storage) environment to a SAN (Storage Area Network) 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 the customer wants only a full function Fibre Channel switch, the SN 5428 is a very cost effective, low latency switch that will perfectly fit a Fibre Channel only implementation.
- When the customer has block level applications and wants to maintain block level access to shared storage combined with IP/Ethernet for a substantial reduction in attachment costs.

Key Features

- Provides levels of security and access control beyond what is currently available in traditional storage area networks by including layer 2 and layer 3 protection to resist against 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.
- Uniquely provides standard IP networking capabilities to storage environments.
- SN 5428: 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
- McData: Fibre Channel Switches
- Qlogic: Fibre Channel Switches
- FalconStor
- Brocade: Fibre Channel switches
Cisco SN 5428 Storage Router
SN5428
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
SN542X-FW-2.x Cisco SN 5428 Firmware: 2.2.x minimum (2.2.1 minimum)
SN-ISCST-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
SN-SFP-FCMM-LC=	SFP for Fibre Channel Multi-mode fiber with LC connector
SN-SFP-FCGEMM-LC=	SFP for GE/FC with LC connector

Cisco SN 5420 Series Packaged SMARTnet Maintenance 8x5xNBD
CON-SNT-PKG10 Cisco SN 5428 Packaged SMARTnet 8x5xNBD—Category 10

For More Information
See the Cisco SN5420 Series Storage Router Web sites:
http://www.cisco.com/go/sn5428
## LAN Switching Products at a Glance

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<th>Product</th>
<th>Features</th>
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<td>Catalyst 2900 Series</td>
<td>Fixed-configuration Ethernet switches</td>
<td>2-3</td>
</tr>
<tr>
<td></td>
<td>• 10/100 auto sensing and auto negotiating interface</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Managed</td>
<td></td>
</tr>
<tr>
<td>Catalyst 2948G-L3</td>
<td>Fixed and Modular ports</td>
<td>2-3</td>
</tr>
<tr>
<td></td>
<td>• Gigabit Ethernet over Fiber or Copper</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• High performance, Cisco Express Forwarding (CEF) Layer 2/3/4 switching up to 48 Mpps</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Advanced network control with predictable performance, granular QoS, advanced security, comprehensive management</td>
<td></td>
</tr>
<tr>
<td>Catalyst 2900 Series XL— Modular Switches</td>
<td>Modular 10/100 Ethernet switches</td>
<td>2-4</td>
</tr>
<tr>
<td></td>
<td>• 12 or 24 10/100 ports</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 12 100BASE-FX ports (2912M F XL)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Two high-speed module slots accommodating 10/100, 100BASE-FX, Gigabit Ethernet (including 1000BASE-T), and GigaStack GBIC (2912M F XL and 2948M XL only)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Cisco switch clustering enabled</td>
<td></td>
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<tr>
<td></td>
<td>• Managed</td>
<td></td>
</tr>
<tr>
<td>Catalyst 2950 Series</td>
<td>Fixed-configuration basic and Intelligent Ethernet 10/100 switches</td>
<td>2-6</td>
</tr>
<tr>
<td></td>
<td>• 12/24/48 10/100 port managed switches with stackable and standalone models</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Flexible uplink options: fixed 100Base FX, fixed 1000Base T, fixed 1000Base SX, and GBIC-based ports</td>
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<tr>
<td></td>
<td>• Industrial-grade, rugged models (Catalyst 2955) for harsh environment deployments</td>
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</tr>
<tr>
<td></td>
<td>• Wire-speed, high performance switch</td>
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<tr>
<td></td>
<td>• 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.</td>
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<tr>
<td></td>
<td>• 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</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Stackable up to 9 switches with Gigastack GBIC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Simplified network management through Cisco Cluster Management Suite up to 16 fixed configuration Catalyst switches</td>
<td></td>
</tr>
<tr>
<td>Catalyst 3500 Series XL</td>
<td>Fixed-configuration 10/100 and Gigabit Ethernet switches</td>
<td>2-10</td>
</tr>
<tr>
<td></td>
<td>• 24 ports with 2 GBIC-based Gigabit Ethernet ports with in-line power (3524-PWR XL)</td>
<td></td>
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<tr>
<td></td>
<td>• 8 GBIC-based ports (3508G XL)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Stackable up to 9 switches with GigaStack GBIC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Cisco Switch Clustering capable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Managed</td>
<td></td>
</tr>
<tr>
<td>Catalyst 3550 Series</td>
<td>Fixed-configuration Intelligent Ethernet switches in stackable 10/100, inline power, or Gigabit Ethernet configurations</td>
<td>2-12</td>
</tr>
<tr>
<td></td>
<td>• Network control and bandwidth optimization via advanced Quality of Service (QoS), granular rate-limiting, Access Control Lists (ACLs), and multicast services</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Network security through a wide range of authentication methods, data encryption technologies, and access restriction features based on users, ports, and M.A.C. addresses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Network scalability through advanced routing protocols such as EIGRP, OSPF, BGP, and PIM (requires Enhanced Multilayer Software Image (EMSI))</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Intelligent adaptability through Cisco Identity Based Networking Services (IBNS) offering greater flexibility and mobility to stratified users</td>
<td></td>
</tr>
</tbody>
</table>
Cisco LAN and MAN Products Port Matrix

<table>
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<tr>
<th>Product</th>
<th>Features</th>
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</thead>
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<tr>
<td>Catalyst 4500 Series—Modular Configuration (4503, 4506 and 4507R)</td>
<td>Modular, multilayer switch with integrated intelligent services for converged networks in enterprise campus wiring closets, Layer2 Layer3 distribution, and integrated LAN/WAN branch office. • Resilient architecture for mission critical applications • Up to 240 ports of Ethernet, Fast Ethernet or Gigabit Ethernet over Fiber or Copper • High performance, Cisco Express Forwarding (CEF) Layer 2/3/4 switching up to 48 Mpps • Up to 64 Gbps of switching capacity • Advanced network control with predictable performance, granular QoS, advanced security, comprehensive management • Managed</td>
<td>2-15</td>
</tr>
<tr>
<td>Catalyst 4000 Series—Fixed Configuration (4908G-L3 and 4912G)</td>
<td>High performance fixed Gigabit Ethernet switch with intelligent enterprise Cisco IOS services</td>
<td>2-17</td>
</tr>
<tr>
<td>Catalyst 5000 Family</td>
<td>Modular switch that supports a broad range of interfaces for aggregation of legacy technologies with IP technology • End of Sale Effective June 2003/End of Support effective 2008 For further information please contact your local sales representative</td>
<td>2-18</td>
</tr>
<tr>
<td>Catalyst 6500 Family</td>
<td>High-performance, multilayer switch with integrated intelligent services for enterprise campus backbones, server aggregation, or Internet data centers • 10/100, 100FX Fast Ethernet, 1000BASE-T, 1000BASE-X, and Gigabit Ethernet modules • Layer 4-7 services • Up to 256 Gbps of switching capacity • Packet throughput scalable to 100+ Mpps • Manged</td>
<td>2-20</td>
</tr>
<tr>
<td>Catalyst 8500 Series</td>
<td>High-performance, modular, multimedia switch router • Wire speed, nonblocking IP, IPX, IP multicast Layer 3 switching • Multiple interface options • Managed</td>
<td>2-24</td>
</tr>
</tbody>
</table>

Cisco LAN and MAN Products Port Matrix

<table>
<thead>
<tr>
<th>Switches</th>
<th>Catalyst 2900</th>
<th>Catalyst 2900 XL</th>
<th>Catalyst 2950</th>
<th>Catalyst 3500 XL</th>
<th>Catalyst 4500</th>
<th>Catalyst 6000</th>
<th>Catalyst 8500</th>
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</thead>
<tbody>
<tr>
<td>Fixed Ports Only</td>
<td>X</td>
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<tr>
<td>Fixed and Modular Ports</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>Modular Ports Only</td>
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</table>

Ports

<table>
<thead>
<tr>
<th>Ports</th>
<th>Catalyst 2900</th>
<th>Catalyst 2900 XL</th>
<th>Catalyst 2950</th>
<th>Catalyst 3500 XL</th>
<th>Catalyst 4500</th>
<th>Catalyst 6000</th>
<th>Catalyst 8500</th>
</tr>
</thead>
<tbody>
<tr>
<td>10BASE-T Switched</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>Integrated In-Line Power</td>
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Cisco Catalyst 2900 Series

The Catalyst 2948G and 2980G deliver all the Ethernet switching needed for many small to medium-sized wiring closets in a single system without the need for additional modules, cables or other interconnects. Utilizing the same industry-leading software and functionality of the Catalyst 4000, 5000, and 6000 families, the Catalyst 2948G and 2980G have consistent end-to-end services, which ensure complete interoperability with enterprise Catalyst switches.

When to Sell

Sell This Product | When a Customer Needs These Features
--- | ---
Catalyst 2980G Series | • A single box solution without additional cables, modules or configuration
• Up to 80 ports of wire-speed, non-blocking performance with large MTBF reliability
• End-to-end VLANs, EtherChannel, multicasting, and security
• Mature proven Catalyst software compatibility in the wiring closet and data center
Catalyst 2948G Series | • The same features as 2980G but up to 48 ports of wire-speed, non-blocking performance
Catalyst 2948G-L3 | • High performance CPU with Cisco IOS software
• Dedicated 48 ports of 10/100 Mbps and two ports of 1000BASEX Gigabit Ethernet with gigabit Ethernet converter (GBIC) support; all ports support Layer 3 capability

Key Features

• Powerful non-blocking performance with proven Cisco IOS services
• Wire speed 18 Million pps switching throughput
• Intelligent multilayer IOS services (security, multicast, quality of service [QoS])
• Advanced multiple queue QoS architecture
• Security (TACACS+, RADIUS, port lockdown)
• Spanning-Tree Protocol (802.1D) with enhancements (UplinkFast, PortFast) for deterministic/fast failover
• Redundant Power Supply (option)

Competitive Products

• HP Procurve: 4108gl, 4000M
• 3Com: 55300
• Nortel/Bay: BayStack 350T and 450T
• Extreme: Summit 48si

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Catalyst 2980G</th>
<th>Catalyst 2948G-L3</th>
<th>Catalyst 2948G</th>
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<tbody>
<tr>
<td>Fixed Ports (connections)</td>
<td>80-port 1000BASE-TX</td>
<td>48-port 1000BASE-TX</td>
<td>48-port 1000BASE-TX</td>
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<td>2-port 1000BASE-X (GBIC)</td>
<td>2-port 1000BASE-X (GBIC)</td>
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<td>Backplane</td>
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<td>22 Gbps</td>
<td>24 Gbps</td>
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<td>Stackable</td>
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<td>No</td>
<td>No</td>
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<td>Full-Duplex Capabilities</td>
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<td>All ports</td>
<td>All ports</td>
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<td>1024</td>
<td>1024</td>
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<td>No</td>
<td>Yes</td>
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<td>Yes</td>
<td>N/A</td>
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<td>802.1Q</td>
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<td>Yes</td>
<td>Yes</td>
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<td>Processor Speed (Type)</td>
<td>200 MHz (R5000 RISC)</td>
<td>200 MHz (R5000 RISC)</td>
<td>200 MHz (R5000 RISC)</td>
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<td>Flash Memory</td>
<td>22 MB</td>
<td>16 MB</td>
<td>12 MB</td>
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<td>DRAM Memory</td>
<td>64 MB</td>
<td>64 MB</td>
<td>64 MB</td>
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Cisco Catalyst 2900 Series XL—Modular Switches

Cisco’s Catalyst 2900 Series XL is a full line of modular, 10/100 autosensing Fast Ethernet switches that combine outstanding performance, ease of use, and integrated Cisco IOS software.

When to Sell

Sell This Product

- 2912MF XL
- 2924M XL

When a Customer Needs These Features

- All-fiber switch to aggregate Fast Ethernet workgroups over 100BASE-FX connections in small and mid-size campus environments.
- High-speed uplinks to backbone or server via Fast Ethernet, Gigabit Ethernet.
- The option to easily increase the switch's port density and provide inexpensive high-speed uplinks through bandwidth aggregation (Fast EtherChannel and Gigabit EtherChannel technologies).
- Gigabit Ethernet (including 100BASE-T) modules for high-speed links.
- Hot-swap insertion and removal of modules.
- Maximum flexibility.

Selected Part Numbers and Ordering Information

For More Information

Key Features

- Switch fabric of 3.2 Gbps, a forwarding rate of more than 3.0 million packets per second, and a maximum forwarding bandwidth of 1.6 Gbps, delivering wire-speed performance across all 10/100 ports
- Support for IEEE 802.1p protocol for prioritization of mission-critical and time-sensitive applications such as voice and telephony traffic
- Cisco’s switch clustering technology enables up to 16 interconnected Catalyst 1900, 2900 XL, and 3500 XL switches, regardless of geographic location, to form a flexible, single IP managed network
- Up to 250 port-based VLANs or ISL/802.1Q trunks
- Network port allows operation in networks with unlimited MAC addresses
- Autoconfiguration of multiple switches on a network from one boot server
- Up to 4 Gbps bandwidth between routers, switches, and servers with Fast EtherChannel and Gigabit EtherChannel technologies

Competitive Products

- 3Com SuperStack III 3300
- Nortel BayStack 350 & 450 switches

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Catalyst 2912 MF XL</th>
<th>Catalyst 2924M XL</th>
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</thead>
<tbody>
<tr>
<td>Fixed Ports</td>
<td>12-port 100BASE-FX</td>
<td>24-port 10/100 autosensing</td>
</tr>
<tr>
<td>Modular Slots</td>
<td>2</td>
<td>Same as Catalyst 2912MF XL</td>
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<tr>
<td>Available Modules</td>
<td>4-port 10BASE-T/100BASE-T autosensing</td>
<td>Same as Catalyst 2912MF XL</td>
</tr>
<tr>
<td></td>
<td>2-port or 4-port switched 100BASE-TX</td>
<td>1-port Gigabit Ethernet (1000BASE-T or GBIC-based)</td>
</tr>
<tr>
<td>Backplane</td>
<td>3.2 Gbps</td>
<td>Same as Catalyst 2912MF XL</td>
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<tr>
<td>Stackable</td>
<td>Yes</td>
<td>Same as Catalyst 2912MF XL</td>
</tr>
<tr>
<td>Full Duplex Capabilities</td>
<td>All 10BASE-T, 100BASE-TX, and 1000BASE-X</td>
<td>Same as Catalyst 2912MF XL</td>
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<tr>
<td>VLAN Maximum</td>
<td>250-port-based VLANs or ISL/802.1Q trunks</td>
<td>Same as Catalyst 2912MF XL</td>
</tr>
<tr>
<td>FEC</td>
<td>Yes</td>
<td>Same as Catalyst 2912MF XL</td>
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<tr>
<td>Inter-Switched Link</td>
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<td>Flash Memory</td>
<td>4 MB</td>
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<td>CPU DRAM</td>
<td>8 MB</td>
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<tr>
<td>Embedded RMON</td>
<td>History, Events, Alarms, Statistics</td>
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<td>Dimensions (HxWxD)</td>
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<td>Weight</td>
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</table>

Selected Part Numbers and Ordering Information

Catalyst 2900 Series XL Switches

- WS-C2912MF-XL: 12-port 100BASE-FX, 2 module slots
- WS-C2924M-XL-EN: 24-port 10/100 (autosensing), 2 module slots
- WS-C2924M-XL-EN-DC: 24-port 10/100 (autosensing), 2 module slots, DC powered

Catalyst 2900 Series XL Switch Bundles

- WS-C2924M-XL-EN-SP: Five Catalyst 2924M XL Switches

Catalyst 2900 Series XL Modules

- WS-X2924-XL-V: 4-port 10/100 ISL/802.1Q Module
- WS-X2924-XL-V: 4-port 1000BASE-FX ISL/802.1Q Module
- WS-X2924-XL-V: 2-port 1000BASE-FX ISL/802.1Q Module
- WS-X2932-XL: 2-port 100BASE-T Switch Uplink Module
- WS-X2932-XL: 1-port GBIC-based, 1000BASE-X Switch Uplink Module
- WS-G5486=LSX-GBIC: 1000BASE-LX/LH, long wavelength/livelong haul, single or multimode fiber
- WS-G5486=LSX-GBIC: 1000BASE-SX short wavelength, multimode fiber

Catalyst 2900 Series XL Accessories

- CAB-GS-1M: 1 meter cable for GigStack GBIC
- CAB-GS-5CM: 50 centimeter cable for GigStack GBIC
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. The 2950C-24, 2950T-24, 2950G-12-EI, 2950G-24-EI, 2950G-48-EI and 2950G-24-EI-DC are part of an affordable product line that brings 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. 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. The Cisco Catalyst 2950SX-24, 2950-24 and 2950-12, members of the Cisco Catalyst 2950 Series Switches, are standalone, fixed-configuration, managed 10/100 switches with Gigabit uplinks (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 that provide Fast Ethernet and Gigabit Ethernet connectivity for deployment in harsh environments. With a range of copper and fiber uplink options, the Catalyst 2955 operates in environments such as industrial networking solutions (industrial Ethernet deployments), intelligent transportation systems (ITSSs), 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.

Embedded in all the products in the Catalyst 2950 Series 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.
Chapter 2  LAN Switching

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-24
- High speed uplink flexibility with fixed 10/100/1000BaseT ports
- Low price per port

Catalyst 2950C-24
- High speed uplink flexibility over extended distances with fixed 100BASE-FX connections using MTP-A 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

Catalyst 2950-24
- Medium port density

Catalyst 2950SX-24
- High speed uplinks with 2 fixed 1000BaseSX 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
- 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 300 (RPS 300)
- Switches with Standard Image (SI) include these additional features:
  - Catalyst 2950SX-24 switch provides a cost-effective solution for Gigabit speeds over fiber, offering 2 1000BaseSX uplinks
  - QoS and Security based on Layer 2 information
  - Basic Cisco IOS Services
• Intelligent Ethernet Switches with Enhanced Image (EI) include these additional features:
  - Catalyst 2950T-24 switch is a component of the Cisco Gigabit Ethernet over copper solution, offering 10/100/100BaseT uplinks
  - Powerful Gigabit-uplink options—GBIC-based or 1000BaseT
  - Superior control through advanced intelligent services—advanced quality of service based on Layer 2 through Layer 4 parameters
  - Superior Security features: based on Layer 2 through Layer 4 Access Control Parameters
  - Enhanced Cisco IOS Services

Competitive Products

- Hewlett Packard: Procurve 2500 /2650
- Nortel: BPS 2000/400T/420T
- 3 Com: Superstack 3300/4300/4400SE/4200 series
- Extreme: Summit 24 e2e3
- Dell: Powerconnect 3024/3048/3248
- Hirschmann
- GarretCom
- Sixnet

Specifications

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<tr>
<td>Fixed Ports</td>
<td>48 port 10/100 autosensing &amp; 2 GBIC-based Gigabit Ethernet ports</td>
<td>24 port 10/100 autosensing &amp; 2 GBIC ports</td>
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<td>8.8 Gbps</td>
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<td>All Ports</td>
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<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Embedded RMON</td>
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<td>1.7 x 21.5 x 9.52 in.</td>
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## Chapter 2  LAN Switching

### Selected Part Numbers and Ordering Information

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<thead>
<tr>
<th>Feature</th>
<th>Catalyst 2950C-24</th>
<th>Catalyst 2950-24</th>
<th>Catalyst 2950-12</th>
<th>Catalyst 2950S X-24</th>
<th>Catalyst 2955 (T-12, C-12, S-12)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fixed Ports</strong></td>
<td>26 port (24 10/100 autosensing &amp; 2 ports 1000BaseFX)</td>
<td>26 port 10/100 autosensing</td>
<td>12 port 10/100 autosensing</td>
<td>26 port (24 10/100 autosensing &amp; 2 ports 1000BaseFX)</td>
<td>12 10/100 ports T-12: 2 fixed 1000Base-T uplink ports C-12: 2 fixed 1000Base-EX multimode uplink ports S-12: 2 fixed 1000Base-LX single-mode uplink ports</td>
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<tr>
<td><strong>Forward Bandwidth</strong></td>
<td>5.2 Gbps</td>
<td>4.8 Gbps</td>
<td>2.4 Gbps</td>
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<td>13.6 Gbps</td>
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<td><strong>Forwarding Rate</strong></td>
<td>3.9 Mpps</td>
<td>3.6 Mpps</td>
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<td><strong>Full-Duplex Capabilities</strong></td>
<td>All Ports Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 All Ports</td>
<td>Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 All Ports</td>
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<tr>
<td><strong>VLAN Maximum</strong></td>
<td>250-port-based VlANS</td>
<td>64-port-based VlANS</td>
<td>64-port-based VlANS</td>
<td>64-port-based VlANS</td>
<td>250-port-based VlANS</td>
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<td><strong>FEC</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td><strong>802.1Q</strong></td>
<td>Yes</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
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<td><strong>Security</strong></td>
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<td>Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Port Security, with MAC aging, Private VLAN Edge, 802.1x, RADIUS, SNMPv3 (non-crypto)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Multicast</strong></td>
<td>IGMP Snooping Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24 Same as 2950 C-24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 manageable with unparalleled investment protection. This line of low-cost, high-performance switching solutions provides next-generation 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 3550, 2950, 3500 XL, 2900 XL, 1900, and FastHub 400 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 3524-PWR XL
- A stackable, wire-speed 10/100 and Gigabit Ethernet switch for delivering dedicated 10 or 100 Mbps to individual users and servers
- Advanced QoS, high availability, and integrated in-line power enabling easy deployment of IP phones and wireless access points.

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

Redundant Power System (RPS)
- PW-RPS5-AC-RPS-N1= 675W Redundant Power Supply with 1 connector cable
- VAB-RPS-1414= 12 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
Key Features

- 10.8 Gbps switch fabric, up to 8 Mpps forwarding rate, and maximum forwarding bandwidth of 5.4 Gbps across all 10/100 ports
- 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
- 3524-PWR XL provides in-line power to IP phones and other devices

Competitive Products

- 3Com: SuperStack 3 Switch 3000 and 3900
- Hewlett Packard: ProCurve 2524, 2424M, 4000, and 8000
- Nortel: BayStack 450T and BPS 2000 switches

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Catalyst 3524-PWR XL</th>
<th>Catalyst 3508G XL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Ports</td>
<td>24-port 10/100 autosensing, 2-port 1000BASE-X (GBIC)</td>
<td>8-port 1000BASE-X (GBIC)</td>
</tr>
<tr>
<td>Modular Slots</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Backplane</td>
<td>10 Gbps</td>
<td>10 Gbps</td>
</tr>
<tr>
<td>Stackable</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Full-Duplex</td>
<td>All ports</td>
<td>All ports</td>
</tr>
<tr>
<td>VLAN Maximum</td>
<td>250 port-based VLANs or ISL/802.1q switches</td>
<td>250 port-based VLANs or ISL/802.1q switches</td>
</tr>
<tr>
<td>PFC</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Inter-Switch Link</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>In-Line Power</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Management Capabilities</td>
<td>SNMP, RMON, CWSI, CLI-based out-of-band, embedded Cisco Visual Switch Manager, Web-based interface</td>
<td>SNMP, RMON, CWSI, CLI-based out-of-band, embedded Cisco Visual Switch Manager, Web-based interface</td>
</tr>
<tr>
<td>Processors</td>
<td>Cisco designed ASICs</td>
<td>Cisco designed ASICs</td>
</tr>
<tr>
<td>Flash Memory</td>
<td>4 MB</td>
<td>4 MB</td>
</tr>
<tr>
<td>CPU DRAM</td>
<td>8 MB</td>
<td>8 MB</td>
</tr>
<tr>
<td>Embedded RM ON</td>
<td>History, Events, Alarms, Statistics</td>
<td>History, Events, Alarms, Statistics</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>1.75 x 17.5 x 11.8 in</td>
<td>1.75 x 17.5 x 11.8 in</td>
</tr>
</tbody>
</table>

Selected Part Numbers and Ordering Information

Catalyst 3500 Series XL Switches

- WS-C3524-PWR-XL-EN 24-port 10/100 (autosensing), 2 1000X GBIC Slots, inline power
- 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 BxSxNBD Maintenance
- CON-SNT-PKG5 Catalyst 3524 XL and 3524-PWR XL SMARTnet BxSxNBD Maintenance
- CON-SNT-PKG6 Catalyst 3548 XL SMARTnet BxSxNBD Maintenance
- CON-SNT-PKG9 Catalyst 3508G XL SMARTnet BxSxNBD 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/3500x1

Cisco Catalyst 3500 Series XL
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

<table>
<thead>
<tr>
<th>Sell This Product</th>
<th>When a Customer Needs These Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalyst 3550 Series</td>
<td>Enterprise-class intelligent services such as ACLs, advanced QoS, and rate-limiting</td>
</tr>
<tr>
<td>Catalyst 3550-48-EMI</td>
<td>High performance advanced IP routing</td>
</tr>
<tr>
<td>Catalyst 3550-48-SMI</td>
<td>High Port Density</td>
</tr>
<tr>
<td>Catalyst 3550-24-EMI</td>
<td>High performance advanced IP routing</td>
</tr>
<tr>
<td>Catalyst 3550-24-EMI</td>
<td>Ideal as a powerful access layer switch for a medium enterprise wiring closet with routed uplinks</td>
</tr>
<tr>
<td>Catalyst 3550-24-SMI</td>
<td>Medium Port Density</td>
</tr>
<tr>
<td>Catalyst 3550-24-EMI</td>
<td>Ideal for a powerful access layer switch for a medium enterprise wiring closet</td>
</tr>
<tr>
<td>Catalyst 3550-24PWR-EMI</td>
<td>High performance advanced IP routing</td>
</tr>
<tr>
<td>Catalyst 3550-24PWR-EMI</td>
<td>Medium Port Density</td>
</tr>
<tr>
<td>Catalyst 3550-24PWR-EMI</td>
<td>Integrated inline power to Cisco IP telephones and Cisco wireless LAN access points</td>
</tr>
<tr>
<td>Catalyst 3550-24PWR-SMI</td>
<td>Medium Port Density</td>
</tr>
<tr>
<td>Catalyst 3550-24PWR-SMI</td>
<td>Integrated inline power to Cisco IP telephones and Cisco wireless LAN access points</td>
</tr>
<tr>
<td>Catalyst 3550-24PWR-SMI</td>
<td>Ideal for a powerful access layer switch for a medium enterprise wiring closet</td>
</tr>
<tr>
<td>Catalyst 3550-24PWR-SMI</td>
<td>Basic IP routing</td>
</tr>
<tr>
<td>Catalyst 3550-24-DC-SMI</td>
<td>Medium Port Density</td>
</tr>
<tr>
<td>Catalyst 3550-24-DC-SMI</td>
<td>DC powered, NEBS level 3 compliant</td>
</tr>
<tr>
<td>Catalyst 3550-24-FX-SMI</td>
<td>Medium Port Density</td>
</tr>
<tr>
<td>Catalyst 3550-24-FX-SMI</td>
<td>Ideal for 100FX aggregation</td>
</tr>
<tr>
<td>Catalyst 3550-12G</td>
<td>High performance IP routing</td>
</tr>
<tr>
<td>Catalyst 3550-12T</td>
<td>High performance advanced IP routing</td>
</tr>
<tr>
<td>Catalyst 3550-12T</td>
<td>Gigabit Ethernet aggregation using fiber</td>
</tr>
<tr>
<td>CD-3550-EM1</td>
<td>High performance advanced IP routing</td>
</tr>
<tr>
<td>CD-3550-EM1</td>
<td>EM upgrade kit for standard versions of the Catalyst 3550-24, 3550-24PWR, 3550-24-DC, 3550-24-FX, and 3550-48 switches</td>
</tr>
</tbody>
</table>
## 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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Catalyst 3550-48</th>
<th>Catalyst 3550-24</th>
<th>Catalyst 3550-24PW</th>
<th>Catalyst 3550-12G</th>
<th>Catalyst 3550-12T</th>
<th>Catalyst 3550-24-DC</th>
<th>Catalyst 3550-24-FX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Ports</td>
<td>48 10/100 ports</td>
<td>24 10/100 ports</td>
<td>48 10/100 ports</td>
<td>10 Gigabit-based Gigabit Ethernet ports</td>
<td>10 Gigabit-based Gigabit Ethernet ports</td>
<td>12 10/100/1000 ports</td>
<td>24 10/100 ports</td>
</tr>
<tr>
<td>Switching Fabric</td>
<td>13.6 Gbps</td>
<td>8.8 Gbps</td>
<td>8.8 Gbps</td>
<td>24 Gbps</td>
<td>24 Gbps</td>
<td>8.8 Gbps</td>
<td>8.8 Gbps</td>
</tr>
<tr>
<td>VLAN Maximum</td>
<td>1005</td>
<td>1005</td>
<td>1005</td>
<td>1005</td>
<td>1005</td>
<td>1005</td>
<td>1005</td>
</tr>
<tr>
<td>FEC/GEC</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>GBICs</td>
<td>Gigastack, 1000BaseT, SX</td>
<td>Gigastack, 1000BaseT, SX</td>
<td>Gigastack, 1000BaseT, SX</td>
<td>Gigastack, 1000BaseT, SX</td>
<td>Gigastack, 1000BaseT, SX, LX/LH, ZX</td>
<td>Gigastack, 1000BaseT, SX, LX/LH, ZX, CWDM</td>
<td>Gigastack, 1000BaseT, SX, LX/LH, ZX</td>
</tr>
<tr>
<td>802.1Q and ISL</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>In-Line Power</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>QoS</td>
<td>802.1Q, DSCP, 4gress Queues, WRR, Strict Priority Queueing, WRED</td>
<td>Same as Catalyst 3550-48</td>
<td>Same as Catalyst 3550-48</td>
<td>Same as Catalyst 3550-48</td>
<td>Same as Catalyst 3550-48</td>
<td>Same as Catalyst 3550-48</td>
<td>Same as Catalyst 3550-48</td>
</tr>
<tr>
<td>Multicast</td>
<td>IGMP Snooping, PIM (requires EMI), DVMRP (requires EMI)</td>
<td>IGMP Snooping, PIM (requires EMI)</td>
<td>IGMP Snooping, PIM (requires EMI), DVMRP (requires EMI), CGMP Server (requires EMI)</td>
<td>IGMP Snooping, PIM (requires EMI)</td>
<td>IGMP Snooping, PIM (requires EMI), DVMRP (requires EMI), CGMP Server (requires EMI)</td>
<td>IGMP Snooping, PIM (requires EMI)</td>
<td>IGMP Snooping, PIM (requires EMI), DVMRP (requires EMI), CGMP Server (requires EMI)</td>
</tr>
<tr>
<td>Management Capabilities</td>
<td>SNMP, Telnet, RMON, CW5, CLI-based out-of-band, embedded CMS</td>
<td>Same as Catalyst 3550-48</td>
<td>Same as Catalyst 3550-48</td>
<td>Same as Catalyst 3550-48</td>
<td>Same as Catalyst 3550-48</td>
<td>Same as Catalyst 3550-48</td>
<td>Same as Catalyst 3550-48</td>
</tr>
<tr>
<td>Flash Memory</td>
<td>16 MB</td>
<td>16 MB</td>
<td>16 MB</td>
<td>16 MB</td>
<td>16 MB</td>
<td>16 MB</td>
<td>16 MB</td>
</tr>
<tr>
<td>CPU DRAM</td>
<td>64 MB</td>
<td>64 MB</td>
<td>64 MB</td>
<td>64 MB</td>
<td>64 MB</td>
<td>64 MB</td>
<td>64 MB</td>
</tr>
</tbody>
</table>
Chapter 2  LAN Switching

Cisco Catalyst 3550 Series Intelligent Ethernet Switches

Selected Part Numbers and Ordering Information

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 4500 Series

The Cisco Catalyst 4500 Series integrates nonblocking Layer 2/3/4 switching with optimal control, enabling business resilience for enterprise and metropolitan Ethernet customers deploying Internet-based business applications. A next generation Catalyst 4000 Series platform, the Cisco Catalyst 4500 Series includes three new chassis: Catalyst 4507R (7-slot: redundant Supervisor IV capable), Catalyst 4506 (6-slot) and Catalyst 4503 (3-slot). A key component of Cisco AVVID (Architecture for Voice, Video and Integrated Data), the Catalyst 4500 extends control to Enterprise wiring closets, branch office and Layer 3 distribution points. A variety of network infrastructure solutions are enabled by the Catalyst 4500 Series of switches including: Cisco IOS Network Services, IP Telephony, 10/100/1000 to the desktop, Wireless LAN, NetFlow Services and Metro Ethernet Switching.

When to Sell

Key Features

- **Supervisor II**
  - Catalyst 4500/6500 Series CatOS Software, single IPQ—Address Management, and security (TACACS+, port lockdown, RADIUS, Kerberos)
  - Enterprise VLANs (4,096) with 802.1Q support on all ports, 16,000 MAC Addresses, and Spanning-Tree Protocol (802.1D) enhancements (UplinkFast, PortFast, and BackboneFast) for deterministic/fast failover
  - Fast and Gigabit EtherChannel aggregation (up to 8 Gbps full duplex), load balancing and failover on every port, and port filtering

- **Supervisor IV**
  - Capable of 1+1 redundancy in a 4507R (Single Supervisor only in Catalyst 4506 and 4503)
  - Optional NetFlow Services Card Support
  - Integrated Layer 2/3/4 CEF based switching at 64Gbps and 48Mpps
  - Feature rich and proven Cisco IOS Software
  - Port based enhanced QOS with multiple queues (16k input; 16k output), bandwidth management, policing and Access Control Lists (16k input ACL entries; 16k output entries)
  - Enterprise VLANs (4,000) with 802.1Q and ISL support on all ports, 32,000 MAC Addresses, and Spanning-Tree Protocol (802.1D), 802.3w, 802.3s
Chapter 2 LAN Switching

- Supports RIP I, RIP II, Open Shortest Path First (OSPF), Interior Gateway Routing Protocol (IGRP), Enhanced IGRP (EIGRP), BGP4, IS-IS, Software based IPX and Appletalk, Hot Standby Router Protocol (HSRP), Cisco Group Management Protocol (CGMP), IGMP v1 and II, Internet Control Message Protocol (ICMP), and both Protocol Independent Multicast (PIM) sparse and dense modes, and Distance Vector Multicast Routing Protocol (DVMRP) interoperability
- Optional compact flash memory cards

Competitive Products

- Extreme Networks: Alpine 3802, Alpine 3804, and Alpine 3808
- Enterasys: Matrix E-5, Matrix E-6, Matrix E-7
- Hewlett Packard: Procurve 5300XL, 4108GL
- Nortel: Passport 8100

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Catalyst 4507R</th>
<th>Catalyst 4506</th>
<th>Catalyst 4503</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Ports</td>
<td>2 gigabit uplink ports on Supervisor Engine IV</td>
<td>2 gigabit uplink ports on Supervisor Engine II, III and IV</td>
<td>2 gigabit uplink ports on Supervisor Engine II, III and IV</td>
</tr>
<tr>
<td>Maximum Port Density</td>
<td>240 (10/100 Fast Ethernet)</td>
<td>240 (10/100 Fast Ethernet)</td>
<td>96 (10/100 Fast Ethernet)</td>
</tr>
<tr>
<td></td>
<td>240 (100-FX Fast Ethernet)</td>
<td>240 (100-FX Fast Ethernet)</td>
<td>96 (100-FX Fast Ethernet)</td>
</tr>
<tr>
<td></td>
<td>240 (10/100/1000BASE-T)</td>
<td>240 (10/100/1000BASE-T)</td>
<td>96 (10/100/1000BASE-T)</td>
</tr>
<tr>
<td>Modular Slots</td>
<td>7 (4 for Supervisors)</td>
<td>8 (1 for Supervisor)</td>
<td>1 (1 for Supervisor)</td>
</tr>
<tr>
<td>Available Modules</td>
<td>Supervisor Engine IV</td>
<td>Supervisor Engine II, III, and IV</td>
<td>Supervisor Engine II, III, and IV</td>
</tr>
<tr>
<td>Redundant Supervisor Capable</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Stackable</td>
<td>Yes (2 bays, 1+1)</td>
<td>Yes (2 bays, 1+1)</td>
<td>Yes (2 bays, 1+1)</td>
</tr>
<tr>
<td>Hot-Swappable Power Supplies</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Dimensions (H x W x D)</td>
<td>46.74 x 43.97 x 31.70 cm</td>
<td>44.13 x 43.97 x 31.70 cm</td>
<td>31.12 x 43.97 x 31.70 cm</td>
</tr>
</tbody>
</table>

Selected Part Numbers and Ordering Information

**Catalyst 4500 Series Switches**

- 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 4000 Supervisor Engine II, Console (RJ-45), Mgt. (RJ-45) (Spare)
- WS-X4014+: Catalyst 4000 Supervisor III (2 GE), Console(RJ-45)
- WS-X4515+ =: Catalyst 4000 Supervisor IV, 2 GE, Console(RJ-45)
- WS-F4531+=: Catalyst 4000 NetFlow Services card for Supervisor Engine IV
- PWR-C45-1000AC=: Catalyst 4500 1000W AC Power Supply (Data Only)
- PWR-C45-1300ACV=: Catalyst 4500 1300W AC Power Supply with Int Voice
- PWR-C45-2800ACV=: Catalyst 4500 2800W AC Power Supply with Int Voice

**Catalyst 4500 Series Common Equipment**

- WS-C4003-51: Catalyst 4000 Chassis (3-Slot), Supervisor Engine 1, 1-AC Power Supply, Fan Tray, Rack-Mount Kit
- WS-C4006-52: Catalyst 4000 Chassis (6-Slot), Supervisor II, QAC Power Supplies, Fan Tray, Rack-Mount Kit
- WS-C4006-53: Catalyst 4000 Chassis (6-Slot), Supervisor III, (2) AC Power Supplies, Fan Tray, Rack-Mount Kit
- WS-C4006-54: Catalyst 4000 Chassis (6-Slot), Supervisor IV, (2) AC Power Supplies, Fan Tray, Rack-Mount Kit
- WS-X4008+: Catalyst 4000/4006 AC Power Supply (Spare)
- WS-X4095-PEM=: Catalyst 4000 DC Power Entry Module (Spare)
- WS-P4603-2PSU: Catalyst 4000 Aux. Power Shelf with 2 PSU
- WS-X4608+: Catalyst 4603 Power Supply Unit for WS-P4603

Cisco Catalyst 4500 Series
Cisco Catalyst 4000 Series — Fixed Configuration

Cisco offers two dedicated Gigabit Ethernet fixed configuration switches; the Catalyst 4908G-L3 and the Catalyst 4912G. The Catalyst 4908G-L3 Switch is a fixed configuration Layer 3 Ethernet switch featuring wire-speed switching for IP, IPX and IP Multicast. It provides the high performance required for midsize campus backbones with optimum port density.

When to Sell

Sell This Product When a Customer Needs These Features

**Catalyst 4908G**
- Cost effective dedicated Gigabit Ethernet Layer 3 backbone solution ideal for deployment in midsize networks for those customers who need wire speed Layer 3 performance but do not require Gigabit Ethernet density over 8 ports.

**Catalyst 4912G**
- Advanced wire-speed, non-blocking Layer 2 Gigabit Ethernet performance with intelligent Cisco IOS services and high-speed connections to workstations or servers; flexible Gigabit Interface Converter (GBIC) interfaces on all ports.

For More Information

See the Catalyst 4500 series Web site: [http://www.cisco.com/go/cat4000](http://www.cisco.com/go/cat4000)
Key Features

- Catalyst 4908G-L3:
  - 8 ports of 1000BASE x Gigabit Ethernet with GBIC support; Layer 3 switching and routing of IP, IPX and IP Multicast with wire speed Layer 2 switching for non routable protocols; Gigabit Etherchannel capability on every port

- Catalyst 4912G:
  - Wire-speed performance with 24 Gbps of dedicated bandwidth for nonblocking Gigabit Ethernet concentration, broad Gigabit EtherChannel availability, and GBIC flexibility on fiber port interfaces covering a wide range of cabling distances

Competitive Products

- Extreme Networks: Summit 1
- Foundry: Turbo Iron 8
- Nortel: Accellar 1200

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Catalyst 4908G-L3</th>
<th>Catalyst 4912G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Ports</td>
<td>8 (All Layer 3)</td>
<td>12 (All Layer 2)</td>
</tr>
<tr>
<td>Backplane Capacity</td>
<td>22 Gbps</td>
<td>24 Gbps</td>
</tr>
<tr>
<td>Stackable</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>VLAN Maximum</td>
<td>244</td>
<td>244</td>
</tr>
<tr>
<td>RSTP</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>ISL</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Management Capabilities</td>
<td>Inband console via terminal or modem, outboard via Telnet, SNMP, CiscoView, CWSI, CiscoWorks 2000</td>
<td>Inband console via terminal or modem, outboard via Telnet, SNMP, CiscoView, CWSI, CiscoWorks 2000</td>
</tr>
<tr>
<td>Dimensions (H x W x D)</td>
<td>2.69 x 17.1 x 18 in</td>
<td>2.75 x 17.5 x 15 in</td>
</tr>
</tbody>
</table>

Selected Part Numbers and Ordering Information

- Catalyst 4000 Switch Family
  - WS-4908G-L3 Switch Family
    - WS-4908G-L3 Switch
    - WS-4912G Switch
    - WS-G5484= 1000BASE-SX GBIC module
    - WS-G5486= 1000BASE-LX/LH GBIC module
    - WS-G5487= 1000BASE-ZX GBIC 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](http://www.cisco.com/dprg) (limited country availability).

For More Information

See the Catalyst 4000 series Web site: [http://www.cisco.com/go/cat4000](http://www.cisco.com/go/cat4000)

Cisco Catalyst 5000 Family

On October 4, 2002, Cisco Systems announced the end of sale for the Cisco Catalyst 5000 and 5500 series of modular switches, including all related Cisco Catalyst 5000 and 5500 series chassis and modules. The Cisco Catalyst 5000 and 5500 series chassis and modules will be orderable through June 30, 2003.

The Catalyst 5000 family features a Gigabit Ethernet and ATM-ready platform offering users high-speed trunking technologies, including Fast EtherChannel and OC-12 ATM. This series also provides a redundant architecture, dynamic VLANs, complete intranet services support, and media-rate performance with a broad variety of interface modules.
Chapter 2  LAN Switching

Migration Options

When a Customer Needs These Features

- Catalyst 6500 with Sup2/msfc2
  - High Performance L3 wiring closet, data centre, or core feature sets
  - Integrated L2-7 Services Modules
  - Layer 3 Routing Capabilities
  - Scalability to 256 Gbps
  - Hardware based QoS and ACLs
  - IOS software

- Catalog 6500 with Sup2/pfc2
  - High Performance L2 wiring closet, data centre or core feature sets
  - Scalability to 256 Gbps
  - Hardware based QoS and ACLs

- Catalog 6500 with sup1A-2GE
  - Low cost entry wiring closet solution
  - Scalability to 32Gbps
  - Basic security and L2 QoS capabilities
  - L2 Stateful failover capabilities

Competitive Products

- Enterasys: Matrix E7, Expedition ER16
- Extreme: Black Diamond
- Foundry: Big Iron
- Nortel: Passport 8100, 8600

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Catalyst 5500</th>
<th>Catalyst 5505</th>
<th>Catalyst 5509</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modular Slots</td>
<td>12</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Available Modules</td>
<td>Supervisor, Engine, 16, or 16 plus any combination of modules (subset listed under Part Numbers and Ordering Information)</td>
<td>Same as Catalyst 5500</td>
<td>Same as Catalyst 5500</td>
</tr>
<tr>
<td>Backplane</td>
<td>3.6 Gbps ATM switching: 5 Gbps backplane</td>
<td>3.6 Gbps</td>
<td>3.6 Gbps</td>
</tr>
<tr>
<td>Full-Duplex Capabilities</td>
<td>All Ethernet, Fast Ethernet, Token Ring, and ATM ports</td>
<td>Same as Catalyst 5500</td>
<td>Same as Catalyst 5500</td>
</tr>
<tr>
<td>VLAN Maximum</td>
<td>Spanning tree: Yes per VLAN; 1000 VLANs</td>
<td>Same as Catalyst 5500</td>
<td>Same as Catalyst 5500</td>
</tr>
<tr>
<td>FEC</td>
<td>100BASE-TX, 100BASE-FX, 100BASE-X</td>
<td>Same as Catalyst 5500</td>
<td>Same as Catalyst 5500</td>
</tr>
<tr>
<td>Management Capabilities</td>
<td>Inboard console via terminal or modem, outboard via Telnet, SNMP, CiscoView, CW Diagnostics, history, alarms, events</td>
<td>Same as Catalyst 5500</td>
<td>Same as Catalyst 5500</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>25.25 x 17.3 x 18.25 in.</td>
<td>10.4 x 17.2 x 18.14 in.</td>
<td>20 x 17.25 x 18.14 in.</td>
</tr>
</tbody>
</table>

1. Supervisor module(s) require a slot in the chassis.

Selected Part Numbers and Ordering Information

Catalog 5500 Family Switch Families

- WS-C5507= 13-slot Chassis, AC Power Supply
- WS-C5505-CHAC= Catalyst 5505 Chassis, AC Power Supply
- WS-C5509-CHAC= Catalyst 5509 Spare Chassis, AC Power Supply

Catalog 5500 Family Basic Maintenance

- CON-SNT-PKG13 Catalyst 5505 Packaged SMARTnet Maintenance BeSxNBD
- CON-SNT-PKG16 Catalyst 5500 Packaged SMARTnet Maintenance BeSxNBD
- CON-SNT-PKG15 Catalyst 5509 Packaged SMARTnet Maintenance BeSxNBD

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 5500/5000 series Web site: http://www.cisco.com/go/5000

Cisco Catalyst 5000 Family
Cisco Catalyst 6500 Family

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 6500 Series
- A highly scalable platform that meets requirements for a dynamic environment including very high multilayer switching performance with high Fast Ethernet and Gigabit Ethernet port densities
- Enterprise campus distribution and core—With industry-leading port densities, performance, and high availability solutions
- Enterprise Server Farm—For Gigabit wire-speed access to mission-critical server farms
- High-capacity wiring closets—In very large deployments, the Catalyst 6000 family delivers advanced Layer 2, 3, and 4 switching in wiring closets
- Value wiring closets where basic L2 QoS and ACL capabilities are required in addition to 2-3 Sec L2 Stateful failover
- WAN/LAN/MAN integration—Single integrated platform simplifies network design, decreases rack space requirements, and decreases overall administration costs
- Advanced, integrated hardware based firewall, content switching, intrusion detection, and network analysis capabilities
- Service Provider Networks—For all dynamic environments including e-commerce, web hosting, and co-location facilities

Key Features

- Application-aware networking with multilayer switching intelligence and support for CiscoAssure policy networking
- High-availability features deliver maximum uptime for mission-critical application support
- Extensive Quality of Service (QOS) features to support mission-critical applications
- Scalable performance to 210 Mpps
- Maximum 10/100 Ethernet port density: 96 (3-slot chassis), 240 (6-slot chassis), 384 (9-slot chassis), and 576 (13-slot chassis)
- Maximum Gigabit Ethernet port density: 32 (3-slot chassis), 82 (6-slot chassis), 130 (9-slot chassis), and 194 (13-slot chassis)

Competitive Products

- Extreme: Black Diamond
- Foundry: Big Iron
- Lucent: Cajun Switch 550
- Nortel: Passport 8600
Chapter 2  LAN Switching

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>6503</th>
<th>6506</th>
<th>6509</th>
<th>6513</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modular Slots</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>Available Modules</td>
<td>If a 24 port Gigabit Ethernet, 24 port 100FX Ethernet (multimode or single model); 48 port 10/100 Ethernet (RJ45); 48 port 10/100 Ethernet (RJ21 or TELCO); 1 port Multi-mode OC12 ATM; 1 port Single Mode OC12 ATM; 15 port 1000BASE-T Gigabit Ethernet; 254 port 10/100 Ethernet (RJ45); 254 port 10BASE FL (MT RJ); Network Analysis Module; Flex Wan Module; 24 port FXS Analog Station Interface Module; Voice T1 or E1 Services Module; Voice Power Feature Card; Intrusion Detection Module; Content Switching Module; Fabric Enabled Line Cards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backplane</td>
<td>Scalable to 256 Gbps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multilayer Performance</td>
<td>Scalable to 100+ Mpps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VLAN Maximum</td>
<td>4000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FEC/GEC Up to 8 noncontiguous ports; supports multimode channeling.</td>
<td>Same as Catalyst 6503</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management Capabilities</td>
<td>CiscoWorks 2000, RMON, Enhanced Switched Port Analyzer (ESPA), SNMP, Telnet, BOOTP, and Trivial File Transfer Protocol (TFTP)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>21.5 x 21.7 x 21.75 in.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Selected Part Numbers and Ordering Information

Catalyst 6000 Family Chassis
- WS-C6503: Catalyst 6500 3 Slot Chassis
- WS-C6506: Catalyst 6506 Chassis
- WS-C6509: Catalyst 6509 Chassis
- WS-C6509-NMS: Catalyst 6509 Chassis for NEBS Environments
- WS-C6513: Catalyst 6513 Chassis

Catalyst 6500 Series Power Supplies
- PWR-950-AC: Spare 950W AC P/S for Cisco 7603/Cat 6503
- PWR-950-DC: Spare 950W DC P/S for CISCO7600/Cat 6503
- PEM-15A-AC: Spare Pwr Entry Mod for CISCO7600/Cat 6503 (950W AC Pwr Sup)
- PEM-15A-DC: Spare DC Power Entry Mod for CISCO7600/Cat 6503
- WS-CAC-1000W: Catalyst 6000 1000W AC Power Supply, Spare
- WS-CAC-1300W: Catalyst 6000 1300W AC Power Supply, Spare
- WS-CDC-1300W: Catalyst 6000 1300W DC Power Supply, Spare
- WS-CAC-2500W: Catalyst 6000 2500W AC Power Supply
- WS-CAC-4000W-IN= 4000W AC Power Supply, International (cable included)

Catalyst 6000 Family Supervisor Engines and Switch Fabric Modules
- WS-X6K-S1A-MSF2= Catalyst 6500 Supervisor Engine1-A, 2GE, plus M SF2 & PFC
- WS-X6K-SUP1A-2GE= Catalyst 6500 Supervisor Engine1A, Enhanced DoS, 2GE
- WS-X6K-SUP1A-PFC= Catalyst 6500 Supervisor Engine1-A, 2GE, plus PFC
- WS-X6K-S2-PFC2= Catalyst 6500 Supervisor Engine2-2GE, plus PFC-2
- WS-X6K-S2-M-SF2= Catalyst 6500 Supervisor Engine2, 2GE, plus M SF2 & PFC-2
- WS-X6K-SUP2= Catalyst 6500 Supervisor Engine 2, 256 DRAM on Sup2 and M SF2
- WS-SUP2: Catalyst 6500 CEF720 Sup Engine - Integrated Fabric, M SF3
- WS-X6500-SFM= Catalyst 6500 Switch Fabric Module
- WS-X6500-SFM2= Catalyst 6500 Switch Fabric Module 2, Spare

Catalyst 6500 - 10 Gigabit Ethernet
- WS-X6502-10GE: Catalyst 6500 10 Gigabit Ethernet Base Module

Cisco Catalyst 6500 Family
Catalyst 6500 - Gigabit Ethernet
WS-X6348-GE-TX= Catalyst 6000 24-port 10/100/1000 GE Module
WS-X6148-GE-TX= Catalyst 6000 48-port GE, Enhanced QoS (Req. GBICs)
WS-X6148-GBIC= Catalyst 6000 16-port Gig-Ethernet Module, M/T RJ
WS-X6516-GBIC= Catalyst 6500 16-port GigE Mod: fabric-enabled (Req. GBICs)
WS-X6516-GE-TX= Catalyst 6500 16-port GigaCopper Module, x-bar
WS-X6816-GBIC= Catalyst 6500 16-port GigE mod: 2 fab IF w/IDF (Req GBICs)

Chapter 2 LAN Switching

Cisco Catalyst 6500 Family
Chapter 2  LAN Switching

WS-C6503-IPSEC-K9  Cisco Catalyst 6503 IPsec VPN System
WS-C6506-IPSEC-K9  Cisco Catalyst 6506 IPsec VPN System

Catalyst 6000 Family Accessories
WS-F6K-MFC2=  Catalyst 6000 M layer Switch Feature Card (MFC2), Spare
WS-F6K-GFC=  Distributed Forwarding Card
WS-C6K-65LOT-RCK=  Catalyst 6x00 Rack Mount Kit and Cable Organizer
WS-C6K-65LOT-FAN=  Catalyst 6000, Fan Tray for 6-slot Systems
WS-C6K60-RCK=  Catalyst 6x06, Rack Mount Kit and Cable Organizer

Catalyst 6000 Family Software and Element Management Software (EMS)
WS-C6513-EMS-LIC=  Catalyst 6513 EMS Release 2 License-15000 Per Chassis License
WS-C6509-EMS-LIC=  Catalyst 6509 EMS Release 2 License-20000 Per Chassis License
WS-C6506-EMS-LIC=  Catalyst 6506 EMS Release 2 License-25000 Per Chassis License
WS-C6503-EMS-LIC=  Catalyst 6503 EMS Release 2 License-30000 Per Chassis License

Catalyst 6000 Family Software

Catalyst 6000 Family Memory Options
MEM-C6K-FLC16M=  Catalyst 6000, Supervisor PCMCIA 16MB Flash Memory Card
MEM-C6K-FLC24M=  Catalyst 6000, Supervisor PCMCIA 24MB Flash Memory Card
MEM-C6K-128MB=  Catalyst 6000, Memory Option, 128 MB DRAM Option
MEM-C6K-256MB=  Catalyst 6000, Memory Option, 256 MB DRAM Option
MEM-C6K-512MB=  Catalyst 6000, Memory Option, 512 MB DRAM Option
MEM-C6K-1024MB=  Catalyst 6000, Memory Option, 1024 MB DRAM Option

For More Information
See the Catalyst 6000 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, wire-speed Layer 3 switching

Competitive Products

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

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Catalyst 8510</th>
<th>Catalyst 8540</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modular Slots</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>Available Ports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backplane</td>
<td>10 Gbps</td>
<td>40 Gbps</td>
</tr>
<tr>
<td>Throughput Performance</td>
<td>6 Mpps</td>
<td>24 Mpps</td>
</tr>
<tr>
<td>MAN / WAN</td>
<td>POS / ATM UP/LK</td>
<td>POS / ATM UP/LK</td>
</tr>
<tr>
<td>Dimensions [HxWxD]</td>
<td>10.5 x 17.2 x 18.14 in.</td>
<td>25.25 x 17.3 x 18.25 in.</td>
</tr>
</tbody>
</table>
## Chapter 2 LAN Switching

### Selected Part Numbers and Ordering Information

<table>
<thead>
<tr>
<th>Catalyst 8540—Common Equipment</th>
<th>Part Numbers and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C8540-ARM-64K=</td>
<td>C8540 ATM Router Module 64K (also available for 8510)</td>
</tr>
<tr>
<td>C8540-ARM=</td>
<td>C8540 Enhanced ATM Router Module (spare)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Catalyst 8550—Layer 3 Modules and ATM Interface Modules and Uplinks</th>
<th>Part Numbers and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C8540-ACL=</td>
<td>C8540 ACL Daughter Card (also available for C8510/LS1010)</td>
</tr>
<tr>
<td>C8540-T3-4BNC=</td>
<td>C8500 4-port DS-3 PAM (spare and in E3 BNC)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Catalyst 8550—Port Adapter Modules</th>
<th>Part Numbers and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C8540-S-SCAM-2P=</td>
<td>C8540 SuperCAM for Port Adapter Modules (spare)</td>
</tr>
<tr>
<td>C8510TSCAM-2P=</td>
<td>C8510TSCAM-2P= C8510/LS1010 Traffic Shaping Carrier Access Modules (spare)</td>
</tr>
</tbody>
</table>

For More Information
See the Catalyst 8500 series Web site: [http://www.cisco.com/go/8500](http://www.cisco.com/go/8500)
# Wireless LAN Products

## Wireless LAN Products at a Glance (IEEE 802.11b)

<table>
<thead>
<tr>
<th>Product</th>
<th>Features</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cisco Aironet 1200 Series Access Points</strong></td>
<td>Offers investment protection and a smooth migration path to future technologies through a dual band radio design</td>
<td>3-2</td>
</tr>
<tr>
<td></td>
<td>Delivers an enterprise class security solution with the IEEE 802.11x-based Cisco Wireless Security Suite</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Industry-leading security, network management, throughput and software feature set</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support for both line power over Ethernet and local power</td>
<td></td>
</tr>
<tr>
<td><strong>Cisco Aironet 1100 Series Access Point</strong></td>
<td>Single 802.11b radio, upgradable to 802.11g</td>
<td>3-5</td>
</tr>
<tr>
<td></td>
<td>Provides end-to-end solution support for Intelligent Network Services</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Delivers an enterprise class security solution with the IEEE 802.11x-based Cisco Wireless Security Suite</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support for both line power over Ethernet and local power</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cost effective, yet feature-rich</td>
<td></td>
</tr>
<tr>
<td><strong>Cisco Aironet 5 GHz 54 Mbps Wireless LAN Client Adapter</strong></td>
<td>IEEE 802.11a-compliant CardBus adapter that operates in the UNII-1 and UNII-2 bands</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>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</td>
<td></td>
</tr>
<tr>
<td><strong>Cisco Aironet 350 Series Client Adapters</strong></td>
<td>Superior range and throughput</td>
<td>3-8</td>
</tr>
<tr>
<td></td>
<td>Secure network communications</td>
<td></td>
</tr>
<tr>
<td></td>
<td>World mode for international roaming</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PCMCIA card and PCI form factors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IEEE 802.11b</td>
<td></td>
</tr>
<tr>
<td><strong>Cisco Aironet 350 Series Workgroup Bridge</strong></td>
<td>Driverless installation of up to eight Ethernet-enabled devices</td>
<td>3-10</td>
</tr>
<tr>
<td></td>
<td>Optimum wireless performance and range</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Standards-based centralized security</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IEEE 802.11b</td>
<td></td>
</tr>
<tr>
<td><strong>Cisco Aironet 350 Series Wireless Bridge</strong></td>
<td>High-speed, high-power radios, delivering building-to-building links of up to 25 miles (40.2 km)</td>
<td>3-12</td>
</tr>
<tr>
<td></td>
<td>A metal case for durability and plenum rating</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supports both point-to-point and point-to-multipoint configurations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Broad range of support antennas</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Simplified installation, improved performance, and upgradeable firmware, ensuring investment protection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IEEE 802.11b</td>
<td></td>
</tr>
<tr>
<td><strong>Cisco Aironet Antennas and Accessories</strong></td>
<td>A wide array of options</td>
<td>3-14</td>
</tr>
<tr>
<td></td>
<td>FCC-approved directional and omni-directional antennas</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low-loss cable, mounting hardware, and other accessories available</td>
<td></td>
</tr>
<tr>
<td><strong>CiscoWorks Wireless LAN Solution Engine</strong></td>
<td>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</td>
<td>9-23</td>
</tr>
<tr>
<td></td>
<td>Monitors LEAP authentication servers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Enhances security management through mis-configuration detection on access points and bridges</td>
<td></td>
</tr>
</tbody>
</table>
Sample Wireless LAN Solution Overview — In-Building or Site-to-Site

Enterprise, Small/Medium Business Applications
- Service common areas for mobile workers
- Support employees working in multiple offices
- Cost-effective, quick network deployment for temporary or leased offices

Sample Vertical Markets
- Healthcare, retail, government
- Public Access
- Multiple Tenant/Dwelling Units
- Airports, Hotels, Convention Centers
- Education: K-12 and Universities

Cisco Aironet 1200 Series Access Points

The Cisco Aironet 1200 Series Access Point sets the enterprise standard for next-generation high performance secure, manageable, and reliable wireless local-area networks (WLANs) while also providing investment protection because of its upgrade capability and compatibility with current standards. The modular design of the Cisco Aironet 1200 supports IEEE 802.11a and 802.11b technologies in both single- and dual-mode operation. You can configure the Cisco Aironet 1200 to meet customer-specific requirements at the time of purchase and then reconfigure and upgrade the product in the field as these requirements evolve.

The Cisco Aironet 1200 Series protects current and future network infrastructure investments. Compliant with IEEE 802.11a and 802.11b standards, The 802.11a radio supports data rates of up to 54 Mbps and eight non-overlapping channels that offer high performance as well as maximum capacity and scalability. The 802.11b radio provides data rates up to 11 Mbps and three non-overlapping channels to support widely deployed 802.11b clients. The Mini-PCI form factor of the 802.11b radio allows for upgrade to higher-speed 2.4 GHz technologies such as the draft IEEE 802.11g standard. The Cisco Aironet 1200 Series extends end-to-end intelligent networking to the wireless access point with support for enterprise-class virtual LANs (VLANs) and quality of service (QoS). An ideal choice for enterprise installations, the Cisco Aironet 1200 Series can manage up to 16 VLANs, which allows customers to differentiate LAN policies and services, such as security and QoS, for different users. Traffic to and from wireless clients with varying security capabilities can be segregated into VLANs with varying security policies.

Wireless LAN security is a primary concern. The Cisco Aironet 1200 Series secures the enterprise network with a scalable and manageable system featuring the award-winning Cisco Wireless Security Suite. Based on the 802.11x standard for port-based network access, the Cisco Wireless Security Suite takes advantage of the Extensible Authentication Protocol (EAP) framework for user-based authentication.
## Chapter 3 Wireless LAN Products

### When to Sell

**Cisco Aironet 1200 Series Access Point**
- 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.

### Key Features
- Offers investment protection because of its upgrade capability and compatibility with current standards
- Delivers an enterprise class security solution with the IEEE 802.11x-based Cisco Wireless Security Suite
- Industry-leading security, network management, and software feature set
- Support for both inline power over Ethernet or local power
- Simultaneous support for both IEEE 802.11b and IEEE 802.11a

### Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco Aironet 1200 Series Access Points with 802.11a radio installed</th>
<th>With 802.11b radio installed</th>
<th>With both 802.11a and 802.11b radio installed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data Rates Supported</strong></td>
<td>6, 9, 12, 18, 24, 36, 48, 54 Mbps</td>
<td>1, 2, 5.5, and 11 Mbps</td>
<td>Same as 802.11a and 802.11b combined</td>
</tr>
<tr>
<td><strong>Uplink</strong></td>
<td>Auotosensing 802.11/10/148a 413 ETF</td>
<td>Auotosensing 802.11/10/148a 413 ETF</td>
<td>Same as 802.11a and 802.11b combined</td>
</tr>
<tr>
<td><strong>Form Factor</strong></td>
<td>CardBus (32-bit)</td>
<td>Mini-PCI</td>
<td>Same as 802.11a and 802.11b combined</td>
</tr>
<tr>
<td><strong>Frequency Band</strong></td>
<td>5.15 to 5.35 GHz (FCC, UNII 1 and UNII 2), 5.15 to 5.25 GHz (IEEE)</td>
<td>2.412 to 2.462 GHz (ETSI)</td>
<td>Same as 802.11a and 802.11b combined</td>
</tr>
<tr>
<td><strong>Wireless Medium</strong></td>
<td>Orthogonal Frequency Division Multiplexing (OFDM)</td>
<td>Orthogonal Frequency Division Multiplexing (OFDM)</td>
<td>Same as 802.11a and 802.11b combined</td>
</tr>
<tr>
<td><strong>Modulation</strong></td>
<td>DSSS</td>
<td>DSSS</td>
<td>Same as 802.11a and 802.11b combined</td>
</tr>
<tr>
<td><strong>Available Transmit Power Settings</strong></td>
<td>20 mW (13 dBm); 10 mW (17 dBm); 10 mW (18 dBm); 20 mW (15 dBm)</td>
<td>100 mW (10 dBm); 50 mW (11 dBm); 100 mW (12 dBm); 20 mW (15 dBm)</td>
<td>Same as 802.11a and 802.11b combined</td>
</tr>
<tr>
<td><strong>Range (typical @ maximum power setting)</strong></td>
<td>Indoor: 60 ft (18m) @ 54 Mbps, 130 ft (40m) @ 18 Mbps, 170 ft (52m) @ 6 M bps; Outdoor: 100 ft (30m) @ 54 Mbps, 600 ft (183m) @ 18 Mbps</td>
<td>Indoor: 300 ft (90m) @ 11 M bps; Outdoor: 800 ft (240m) @ 11 M bps; 2000 ft (600m) @ 14 Mbps</td>
<td>Same as 802.11a and 802.11b combined</td>
</tr>
<tr>
<td><strong>SMTP Compliance</strong></td>
<td>MIB I and MIB II</td>
<td>MIB I and MIB II</td>
<td>MIB I and MIB II</td>
</tr>
<tr>
<td><strong>Antenna</strong></td>
<td>Indoor: 6 dBi diversity; patch</td>
<td>two RP-TNC connectors (antennas optional, none supplied with unit)</td>
<td>Three 6 dBi diversity; patch</td>
</tr>
</tbody>
</table>

---

### Cisco Aironet 1200 Series Access Points
### Cisco Aironet 1200 Series Access Points

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco Wireless Security Suite</th>
<th>Cisco Wireless Security Suite</th>
<th>Same as 802.11a and 802.11b combined</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Security/Architecture/Client Authentication</strong></td>
<td>Authentication: 802.11x support including LEAP, PEAP, EAP-TLS, EAP-TTLS, and EAP-SIM to yield mutual authentication and dynamic per-user, per-session WEP keys; MAC address and by standard 802.11 address and MAC authentication mechanisms. Encryption: Support for static and dynamic WEP keys of 64 and 128 bits; Pre-standard TKIP WEP enhancements: key hashing (per-packet keying), message integrity check (MIC) and broadcast key rotation.</td>
<td>Authentication: 802.11x support including LEAP, PEAP, EAP-TLS, EAP-TTLS, and EAP-SIM to yield mutual authentication and dynamic per-user, per-session WEP keys; MAC address and by standard 802.11 address and MAC authentication mechanisms. Encryption: Support for static and dynamic WEP keys of 64 and 128 bits; Pre-standard TKIP WEP enhancements: key hashing (per-packet keying), message integrity check (MIC) and broadcast key rotation.</td>
<td>Same as 802.11a and 802.11b combined</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Software Image</th>
<th>Network and Inventory Support</th>
<th>Remote Configuration Support</th>
<th>Local Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>CiscoWorks RM² CiscoWorks SWIM³</td>
<td>CiscoWorks RM² CiscoWorks SWIM³</td>
<td>Telnet, HTTP, FTP, TFTP, Telnet, HTTP, FTP, TFTP, and SNMP</td>
<td>Direct console port (RJ-45 interface)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental</th>
<th>Input Power Requirements</th>
<th>Power Draw</th>
<th>Warranty</th>
</tr>
</thead>
<tbody>
<tr>
<td>-4º to 122ºF (-20º to 55ºC), 10 to 90% humidity (noncondensing)</td>
<td>90 to 240 VAC +/- 10% (power supply)/48 VDC +/- 10% (device)</td>
<td>8 watts, RMS</td>
<td>One year</td>
</tr>
<tr>
<td>-4º to 122ºF (-20º to 55ºC), 10 to 90% humidity (noncondensing)</td>
<td>90 to 240 VAC +/- 10% (power supply)/48 VDC +/- 10% (device)</td>
<td>6 watts, RMS</td>
<td>One year</td>
</tr>
<tr>
<td>4º to 122ºF (-20º to 55ºC), 10 to 90% humidity (noncondensing)</td>
<td>90 to 240 VAC +/- 10% (power supply)/48 VDC +/- 10% (device)</td>
<td>11 watts, RMS</td>
<td>One year</td>
</tr>
</tbody>
</table>

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](http://www.cisco.com/go/aironet)
Cisco Aironet 1100 Series Access Points

The Cisco Aironet® 1100 Series Access Point provides a secure, affordable, and easy-to-use wireless LAN solution that combines mobility and flexibility with the enterprise-class features required by networking professionals.

Taking advantage of the Cisco Wireless Security Suite for the strongest enterprise security available and of Cisco IOS® Software for ease-of-use and familiarity, the Cisco Aironet 1100 Series Access Point delivers manageability, performance, investment protection, and scalability in a cost-effective package with a low total cost of ownership. The Cisco Aironet 1100 Series features a single, upgradable 802.11b radio, integrated diversity dipole antennas, and an innovative mounting system for easy installation in a variety of locations and orientations.

The first access point based on Cisco IOS Software, the Cisco Aironet 1100 Series extends end-to-end intelligent networking to the wireless access point. Cisco command-line interface (CLI) allows customers to quickly and consistently implement extended capabilities available in Cisco IOS Software. Customers can manage and standardize their networks using tools they have developed internally for their Cisco routers and switches.

Enterprise-class features including virtual LANs (VLANs), quality of service (QoS), and proxy mobile Internet Protocol (IP) make the Cisco Aironet 1100 Series ideal for enterprise installations. The Cisco Aironet 1100 Series also supports standard Cisco Aironet features such as hot-standby and load balancing, allowing enterprises to implement intelligent, reliable network services.

When to Sell

Sell This Product When a Customer Needs These Features

Cisco Aironet 1100 Series Access Point

• A cost-effective and upgradable WLAN solution that combines the mobility and flexibility of a WLAN solution with the enterprise-class features required by a business LAN.

Want an off the shelf WLAN solution that does not require simultaneous dual band operation, or the additional range offered by high-gain antennas.

Key Features

• Single 802.11b radio, upgradable to 802.11g
• Provides end-to-end solution support for Intelligent Network Services
• Variety of mounting options
• Cost effective, yet feature-rich

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco Aironet 1100 Series Access Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Rates Supported</td>
<td>6, 11 Mbps</td>
</tr>
<tr>
<td>Network standard</td>
<td>IEEE 802.11b</td>
</tr>
<tr>
<td>Uplink</td>
<td>Autosensing 10/100BaseT Ethernet</td>
</tr>
<tr>
<td>Frequency Band</td>
<td>2.412 to 2.462 GHz ETSC; 2.412 to 2.472 GHz (FCC); 2.422 to 2.452 GHz (Israel); 2.412 to 2.484 GHz (TELEC)</td>
</tr>
<tr>
<td>Network architecture type</td>
<td>Infrastructure, star topology</td>
</tr>
<tr>
<td>Wireless Medium</td>
<td>DSSS (Direct Sequence Spread Spectrum)</td>
</tr>
<tr>
<td>Modulation</td>
<td>DBPSK @ 1 Mbps; DBPSK @ 2 Mbps; CCK @ 5.5 and 11 Mbps</td>
</tr>
<tr>
<td>Operating Channels</td>
<td>ETSC: 13; Israel: 7; Americas: 11; TELEC: 14</td>
</tr>
<tr>
<td>Nonoverlapping Channels</td>
<td>Three</td>
</tr>
<tr>
<td>Receive Sensitivity</td>
<td>1 M bps: -94 dBm; 2 M bps: -91 dBm; 5.5 M bps: -89 dBm; 11 M bps: -85 dBm</td>
</tr>
</tbody>
</table>
Cisco Aironet 5 GHz 54 Mbps Wireless Client Adapter

The Cisco Aironet® 5 GHz 54 Mbps Wireless LAN client adapter is an Institute of Electrical and Electronic Engineers (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.

Wireless LAN client adapters can increase productivity by enabling mobile users to have network and Internet access anywhere within a building that is equipped with a wireless network infrastructure. Wireless client adapters connect a variety of devices to a wireless network either in ad hoc peer-to-peer mode or in infrastructure mode with access points. With this client adapter, you can quickly add new employees to a network, support temporary workgroups, or enable Internet access in conference rooms or other meeting spaces. And the Cisco Aironet client solution is easy to use, making the benefits of wireless mobility completely transparent.

With Cisco, you can confidently deploy a wireless solution that provides robust enterprise-class security. All Cisco Aironet products feature the award-winning Cisco Wireless Security Suite, which is based on the IEEE 802.11x standard for port-based network access.

For More Information

See the Cisco Aironet Web site: http://www.cisco.com/go/aironet
The Cisco Wireless Security Suite takes advantage of the Extensible Authentication Protocol (EAP) framework for user-based authentication. It supports a variety of 802.11x authentication types including EAP Cisco Wireless (LEAP) and EAP-Transport Layer Security (EAP-TLS).

The Cisco Aironet Client Utility (ACU), with an intuitive graphical user interface, provides an easy way to configure, monitor, and manage the Cisco Aironet 5 GHz Wireless LAN Client Adapter. The ACU includes site-survey tools that present easy-to-understand detailed graphical information to assist in the placement of access points. Profile Manager allows you to create specific profile settings for various environments, such as the office or home, making it simple for telecommuters and business travelers to move from one environment to another.

### When to Sell

**Sell This Product**

**Cisco Aironet 5 GHz 54M bps Wireless LAN Client Adapters**

**When a Customer Needs These Features**

- 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

### Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco Aironet 5 GHz 54 Mbps Wireless Client Adapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>CardBus type II</td>
</tr>
<tr>
<td>Interface</td>
<td>802.11 CardBus (PCl)</td>
</tr>
<tr>
<td>Operational voltage</td>
<td>3.3 V (+/- 0.33 V)</td>
</tr>
<tr>
<td>LED</td>
<td>Status (green) and Activity (amber)</td>
</tr>
<tr>
<td>Data Rates Supported</td>
<td>6, 9, 12, 18, 24, 36, 48, 54 Mbps (configurable as fixed or auto selecting to extend range)</td>
</tr>
<tr>
<td>Network Standard</td>
<td>IEEE 802.11a</td>
</tr>
<tr>
<td>Frequency Band</td>
<td>5.15 to 5.25 GHz (UNII-1 and UNII-2); 5.25 to 5.35 GHz (Singapore); 5.25 to 5.35 GHz (Taiwan)</td>
</tr>
<tr>
<td>Network architecture type</td>
<td>Infrastructure, star topology</td>
</tr>
<tr>
<td>Media Access Protocol</td>
<td>Carrier sense multiple access with collision avoidance (CSMA/CA)</td>
</tr>
<tr>
<td>Wireless Medium</td>
<td>Orthogonal Frequency Division Multiplexing (OFDM)</td>
</tr>
<tr>
<td>Modulation</td>
<td>QPSK @ 6 and 9 Mbps; BPSK @ 6 and 9 Mbps; QPSK @ 12 and 18 Mbps; 16-QAM @ 24 and 36 Mbps; 64-QAM @ 48 and 54 Mbps</td>
</tr>
<tr>
<td>Operating Channels</td>
<td>EOC, 8 channels (UNII-1 4 channels and UNII-2 4 channels); 4 channels for Japan, Singapore, and Taiwan</td>
</tr>
<tr>
<td>Available Transmit Power Settings(^1)</td>
<td>4 (6W: 1.14 dBm, 2 (1.70 dBm), 1 (1.41 dBm), 5 mW (1.0 dBm))</td>
</tr>
<tr>
<td>Current steady state (typical)</td>
<td>Transmit: 520 mA; Receive: 580 mA; Sleep: 20 mA</td>
</tr>
<tr>
<td>Range</td>
<td>Indoor: 60 ft (18m) @ 54 Mbps, 130 ft (40m) @ 18 Mbps, 170 ft (52m) @ 6 Mbps</td>
</tr>
<tr>
<td></td>
<td>Outdoor: 50 ft (15m) @ 54 Mbps, 600 ft (183m) @ 18 Mbps, 1000 ft (304m) @ 6 Mbps</td>
</tr>
<tr>
<td></td>
<td>Indoor: 70 ft (21m) @ 54 Mbps, 150 ft (45m) @ 18 Mbps, 200 ft (61m) @ 6 Mbps</td>
</tr>
<tr>
<td></td>
<td>Outdoor: 120 ft (36m) @ 54 Mbps, 700 ft (213m) @ 18 Mbps, 1200 ft (355m) @ 6 Mbps</td>
</tr>
<tr>
<td>Power Management</td>
<td>3 levels of power consumption available, including CAM (Constantly Awake Mode), Fast P-SP (Power Save Mode), Max P-SP (Maximum Power Savings)</td>
</tr>
<tr>
<td>Antenna</td>
<td>Integrated 5dBi gain patch antenna</td>
</tr>
</tbody>
</table>

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**Cisco Aironet 5 GHz 54 Mbps Wireless Client Adapter**
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 that people have come to expect from Cisco. Wireless client adapters connect a variety of devices to a wireless network either in ad hoc peer-to-peer mode or in infrastructure mode with Access Points. Available in PC Card (PCMCIA) and Peripheral Component Interconnect (PCI) form factors, Cisco Aironet 350 Series Client Adapters quickly connect desktop and mobile computing devices wirelessly to all network resources. With this product, you can instantly add new employees to the network, support temporary workgroups, or enable Internet access in conference rooms or other meeting spaces.

Cisco Aironet 350 Series Client Adapters deliver superior range, reliability, and performance for business users needing information access anytime, anywhere. Combined with Cisco Aironet unique security services, this product ensures that business-critical information is secure. Most importantly, the Cisco client solution is easy to use, making the benefits of wireless mobility completely transparent.

When to Sell

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco Aironet 5 GHz 54 Mbps Wireless Client Adapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
<td>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.</td>
</tr>
<tr>
<td>Environmental</td>
<td>-30º to 70ºC, 95% humidity (noncondensing)</td>
</tr>
<tr>
<td>Warranty</td>
<td>One year</td>
</tr>
</tbody>
</table>

1. Management Information Base

For More Information

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

When a Customer Needs These Features

- 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.

When to Sell

Sell This Product
Cisco Aironet 350 Series Client Adapters
Chapter 3  Wireless LAN Products

Key Features

- Superior range and throughput for IEEE 802.11b networks
- Secure network communications
- World mode for international roaming
- Full-featured utilities for easy configuration and management
- Compliance with the IEEE 802.11b high-rate standard
- Support for all popular operating systems

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco Aironet 350 Series Client Adapters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Rates Supported</td>
<td>1, 2, 5.5, and 11 Mbps</td>
</tr>
<tr>
<td>Network Standard</td>
<td>IEEE 802.11b</td>
</tr>
<tr>
<td>System Interface</td>
<td>AIR-PCM35x: PC Card (PCMCIA) Type II</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>2.4 to 2.4835 GHz</td>
</tr>
<tr>
<td>Network Architecture Types</td>
<td>Infrastructure and ad hoc</td>
</tr>
<tr>
<td>Wireless Medium</td>
<td>Direct Sequence Spread Spectrum (DSSS)</td>
</tr>
<tr>
<td>Media Access Protocol</td>
<td>Carrier sense multiple access with collision avoidance (CSMA/CA)</td>
</tr>
<tr>
<td>Modulation</td>
<td>USB2.0 (x1), PCI (x1), PCI Card (PCMCIA)</td>
</tr>
<tr>
<td>Operating Channels</td>
<td>North America: 11; ETSI: 13; Japan: 14</td>
</tr>
<tr>
<td>Nonoverlapping Channels</td>
<td>Three</td>
</tr>
<tr>
<td>Receive Sensitivity</td>
<td>1 Mbps: -94 dBm</td>
</tr>
<tr>
<td></td>
<td>2 Mbps: -91 dBm</td>
</tr>
<tr>
<td></td>
<td>5.5 Mbps: -89 dBm</td>
</tr>
<tr>
<td>Delay Spread</td>
<td>13 Mbps: -85 dBm</td>
</tr>
<tr>
<td>Available Transmit Power Settings*</td>
<td>100 mW (20 dBm); 50 mW (17 dBm); 30 mW (15 dBm); 15 mW (13 dBm); 10 mW (11 dBm)</td>
</tr>
<tr>
<td>Range (Typical)</td>
<td>100ft (30 m)</td>
</tr>
<tr>
<td>Operating Systems Supported</td>
<td>Windows 95, 98, NT 4.0, 2000, XP, LE 2.11, CE 3.0, Mac OS 9.x, and Linux</td>
</tr>
<tr>
<td>Antenna</td>
<td>AIR-PCM35x: Integrated diversity dipoles</td>
</tr>
<tr>
<td></td>
<td>AIR-LMC35x: Two M Crx connectors (antennas optional, none supplied with unit)</td>
</tr>
<tr>
<td></td>
<td>AIR-PCI35x: External, removable 2.2 dBi Dipole with RP-TNC Connector</td>
</tr>
<tr>
<td>Encryption Key Length</td>
<td>128-bit</td>
</tr>
<tr>
<td>Authentication Type</td>
<td>EAP: Cisco Wireless LEAP</td>
</tr>
<tr>
<td>Status Indicators</td>
<td>Link Status and Link Activity</td>
</tr>
<tr>
<td>Dimensions (W x D x H)</td>
<td>AIR-PCM35x: 2.13 in. (5.4 cm) x 4.37 in. (11.1 cm) x 0.1 in. (0.3 cm)</td>
</tr>
<tr>
<td></td>
<td>AIR-LMC35x: 2.13 in. (5.4 cm) x 3.31 in. (8.4 cm) x 0.1 in. (0.3 cm)</td>
</tr>
<tr>
<td></td>
<td>AIR-PCI35x: 6.6 in. (16.8 cm) x 3.9 in. (9.8 cm) x 0.5 in. (1.3 cm)</td>
</tr>
<tr>
<td>Weight</td>
<td>AIR-PCM35x: 1.6 oz (45g)</td>
</tr>
<tr>
<td></td>
<td>AIR-LMC35x: 1.4 oz (40g)</td>
</tr>
<tr>
<td></td>
<td>AIR-PCI35x: 4.4 oz (125g)</td>
</tr>
<tr>
<td>Environmental</td>
<td>AIR-PCM35x and AIR-LMC35x: -22° to 158° F (-30° to 70° C)</td>
</tr>
<tr>
<td></td>
<td>AIR-PCI35x: 32° to 131° F (0° to 55° C)</td>
</tr>
<tr>
<td></td>
<td>10 to 90% (condensing)</td>
</tr>
<tr>
<td>Input Power Requirements</td>
<td>4.5 VDC @ 5%</td>
</tr>
<tr>
<td>Typical Power Consumption (at 100 mW transmit power setting)</td>
<td>Transmit: 406 mA; Receive: 270 mA; Sleep mode: 15 mA</td>
</tr>
</tbody>
</table>

1. Maximum power setting will vary according to individual country regulations.
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. The 802.11b workgroup bridge quickly connects up to eight Ethernet-enabled laptops or other portable computers to a wireless LAN (WLAN), providing a link from these devices to any Cisco Aironet Access Point (AP) or Wireless Bridge (line-of-sight).

Any Ethernet-ready device, including printers, copiers, PCs, point-of-sale devices, or monitoring equipment, can be placed directly at the point of work using the workgroup bridge—without the expense or delay of cabling. For temporary classrooms or temporary office space, the workgroup bridge provides flexible, easy network access for up to eight devices through the use of a standard eight-port Ethernet hub.

Equipment can be easily moved as workgroups change in number or location, lowering facilities costs.

The Cisco Aironet 350 Series Workgroup Bridge supports Wired Equivalent Privacy (WEP) security architecture and provides up to 128-bit encryption. The Cisco Aironet security architecture is based upon an IEEE 802.11x standard utilizing the Extensible Authentication Protocol (EAP), an open standard that enables wireless manufacturers and RADIUS server vendors to independently develop interoperable hardware and software. For authentication of devices attached to the workgroup, a username and password may be stored in the workgroup bridge in either static or dynamic memory. When authenticated, the workgroup bridge receives a single-session, single-user encryption key from the Remote Access Dial-In User Service (RADIUS) server via the associated AP. With this centralized and standards-based architecture, wireless security scales to meet the requirements of any enterprise.

When to Sell

Sell This Product Cisco Aironet 350 Series Workgroup Bridge

When a Customer Needs These Features

- Connectivity to a network for remote workgroups located in an area that may be difficult or not practical for wiring.
- Supports up to eight Ethernet-based devices (with use of Ethernet hub)
Chapter 3 Wireless LAN Products

Key Features

- Driverless installation of up to eight Ethernet-enabled devices
- Optimum wireless performance and range
- Standards-based centralized security
- Two versions for a range of application requirements
- Full-featured utilities and robust management

Specifications

### Feature Cisco Aironet 350 Series Workgroup Bridge

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco Aironet 350 Series Workgroup Bridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Rates Supported</td>
<td>1, 2, 5.5, and 11 Mbps</td>
</tr>
<tr>
<td>Client Interface</td>
<td>10BaseT Ethernet</td>
</tr>
<tr>
<td>Clients Supported</td>
<td>Direct: One</td>
</tr>
<tr>
<td></td>
<td>Via hub: Eight</td>
</tr>
<tr>
<td>Network Architecture Types</td>
<td>Infrastructure (via Cisco Aironet Access Point or Bridge)</td>
</tr>
<tr>
<td>Frequency Band</td>
<td>2.4 to 2.4835 GHz</td>
</tr>
<tr>
<td>Wireless Medium</td>
<td>Direct Sequence Spread Spectrum (DSSS)</td>
</tr>
<tr>
<td>Media Access Protocol</td>
<td>Carrier sense multiple access with collision avoidance (CSMA/CA)</td>
</tr>
<tr>
<td>Modulation</td>
<td>UEPWX @ 1 Mbps; UEPX @ 2 Mbps; UCA @ 5.5 and 11 Mbps</td>
</tr>
<tr>
<td>Operating Channels</td>
<td>North America: 11; ETSI: 13; Japan: 14</td>
</tr>
<tr>
<td>Nonoverlapping Channels</td>
<td>Three</td>
</tr>
<tr>
<td>Receive Sensitivity</td>
<td>1 Mbps: -94 dBm; 2 Mbps: -92 dBm; 5.5 Mbps: -89 dBm; 11 Mbps: -85 dBm</td>
</tr>
<tr>
<td>Delay Spread</td>
<td>1 Mbps: 566 ns; 2 Mbps: 406 ns; 5.5 Mbps: 308 ns; 11 Mbps: 240 ns</td>
</tr>
<tr>
<td>Available Transmit Power Settings(^1)</td>
<td>100 mw (20 dBm); 50 mw (17 dBm); 30 mw (15 dBm); 20 mw (13 dBm); 5 mw (7 dBm); 1 mw (0 dBm)</td>
</tr>
<tr>
<td>Range (Typical)</td>
<td>Indoor: 110 ft (34 m) @ 11 Mbps; 300 ft (91 m) @ 1 Mbps</td>
</tr>
<tr>
<td></td>
<td>Outdoor: 800 ft (244 m) @ 11 Mbps; 2000 ft (610 m) @ 1 Mbps</td>
</tr>
<tr>
<td>Compliance</td>
<td>Operates license free under FCC Part 15 and complies as a Class B device; complies with DOC regulations; complies with EN 300.328 standards</td>
</tr>
<tr>
<td>SNMP Compliance</td>
<td>MIB I and MIB II</td>
</tr>
<tr>
<td>Antenna</td>
<td>AIR-WGB352C: One nonremovable 2.2 dBi dipole</td>
</tr>
<tr>
<td></td>
<td>AIR-WGB352R: Two RP-TNC connectors (antennas optional, none supplied with unit)</td>
</tr>
<tr>
<td>Encryption Key Length</td>
<td>AIR-WGB352x: 128-bit</td>
</tr>
<tr>
<td>Remote Configuration Support</td>
<td>Telnet, HTTP, FTP, TFTP, and SNMP</td>
</tr>
<tr>
<td>Dimensions (W X D X H)</td>
<td>6.30 in. (16 cm) x 4.72 in. (12 cm) x 1.45 in. (3.7 cm)</td>
</tr>
<tr>
<td>Weight</td>
<td>12.3 oz (350g)</td>
</tr>
<tr>
<td>Environmental</td>
<td>Temperature: 34° to 122° F (0° to 50° C); 10 to 90% (Noncondensing)</td>
</tr>
<tr>
<td>Input Power Requirements</td>
<td>North American: 120 VAC @ 60 Hz; Universal: 90 to 264 VAC @ 47 to 63 Hz</td>
</tr>
</tbody>
</table>

\(^1\) Maximum power setting will vary according to individual country regulations.

Selected Part Numbers and Ordering Information\(^1\)

Cisco Aironet 350 Series Workgroup Bridge

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIR-WGB352C</td>
<td>350 Series Workgroup Bridge with Captured Antenna &amp; 128-bit WEP</td>
</tr>
<tr>
<td>AIR-WGB352R</td>
<td>350 Series Workgroup Bridge with Dual RP-TNC &amp; 128-bit WEP</td>
</tr>
</tbody>
</table>

\(^1\) 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 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. It is designed to meet the requirements of even the most challenging applications. 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. They can be configured for point-to-point or point-to-multipoint applications and allow multiple sites to share a single, high-speed connection to the Internet. For functional flexibility, the wireless bridge may also be configured as an access point.

The Cisco Aironet 350 Series Wireless Bridge features an extended operating temperature range of -20° to 55° C, allowing for placement outdoors in a NEMA enclosure or in harsh indoor environments such as warehouses and factories. With a durable metal case, the Cisco Aironet 350 Series Wireless Bridge is UL 2043 certified, and designed to achieve plenum rating as defined by various municipal fire codes.

When to Sell

**Cisco Aironet 350 Series Wireless 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.
- Business owners or IT directors who want multiple buildings on a campus to share a single high-speed line to the Internet.

**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
- Broad range of supported antennas
- Simplified installation, improved performance, and upgradeable firmware, ensuring investment protection
### Chapter 3 Wireless LAN Products

#### Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco Aironet 350 Series Wireless Bridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Rates Supported</td>
<td>1, 2, 5.5, and 11 Mbps</td>
</tr>
<tr>
<td>Frequency Band</td>
<td>2.4 to 2.497 GHz</td>
</tr>
<tr>
<td>Wireless Medium</td>
<td>Direct sequence spread spectrum (DSSS)</td>
</tr>
<tr>
<td>Media Access Protocol</td>
<td>Carrier sense multiple access with collision avoidance (CSMA/CA)</td>
</tr>
</tbody>
</table>
| 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 | 100 mW (20 dBm); 50 mW (17 dBm); 20 mW (13 dBm); 5 mW (7 dBm); 1 mW (0 dBm) |
| Range (typical, contingent upon antenna selected) | Up to 25 miles (40.2 km) @ 2 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; 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 802.1x (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 (0.648 kg) |
| Environmental Temperature | -4 °C to 45 °C (-40 °F to 113 °F) |
| | 10 to 90% (noncondensing) |
| Enclosure | Metal case (for plenum rating); UL 2043 certified |
| Input Power Requirements | 24VDC 20% to 60VDC (Ethernet line power) |

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

#### Selected Part Numbers and Ordering Information

Cisco Aironet 350 Series Wireless Bridge  
AIR-BR350-A-K9 350 Series 11 Mbps 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. 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](http://www.cisco.com/go/aironet)
Cisco Aironet Antennas and Accessories

Every wireless Local Area Network (LAN) deployment is different. When engineering an in-building solution, varying facility sizes, construction materials, and interior divisions raise a host of transmission and multipath considerations. When implementing a building-to-building solution, distance, physical obstructions between facilities, and number of transmission points involved must be considered.

Cisco is committed to providing not only the best access points, client adapters, and bridges in the industry—it is also committed to providing a complete solution for any wireless LAN deployment. That is why Cisco has the widest range of antennas, cable, and accessories available from any wireless manufacturer.

With the Cisco FCC-approved directional and omnidirectional antennas, low-loss cable, mounting hardware, and other accessories, installers can customize a wireless solution that meets the requirements of even the most challenging applications.

Key Features

• Client Adapter Antennas—Cisco Aironet wireless client adapters come complete with standard antennas that provide sufficient range for most applications at 11 Mbps. 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—Cisco Aironet access point antennas are compatible with all Cisco RP-TNC-equipped access points. The antennas are available with different gain and range capabilities, beam widths, and form factors. Coupling the right antenna with the right access point allows for efficient coverage in any facility, as well as better reliability at higher data rates

• Bridge Antennas—Cisco Aironet bridge antennas allow for extraordinary transmission distances between two or more buildings. Available in directional configurations for point-to-point transmission and omnidirectional configuration for point-to-multipoint implementations, Cisco has a bridge antenna for every application

• 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
### Specifications

#### Client Adapter Antennas

<table>
<thead>
<tr>
<th>Feature</th>
<th>AIR-ANT3351</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>POS diversity dipole²</td>
</tr>
<tr>
<td>Application</td>
<td>Indoor diversity antenna² to extend the range of Aironet WLC client adapters</td>
</tr>
<tr>
<td>Approximate Indoor Range at 1 Mbps¹</td>
<td>350 ft (107 m)</td>
</tr>
<tr>
<td>Approximate Indoor Range at 11 Mbps¹</td>
<td>307 ft (94 m)</td>
</tr>
<tr>
<td>Cable Length</td>
<td>5 ft. (1.5 m)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Base: 7 x 2 in. (18 x 5 cm) Height: 8 in. (20 cm)</td>
</tr>
<tr>
<td>Weight</td>
<td>0.2 oz. (6 g)</td>
</tr>
</tbody>
</table>

1. A type of low-gain (2.2 dBi) antenna consisting of two (often internal) elements.
2. A ratio of decibels to an isotropic antenna that is commonly used to measure antenna gain. The greater the dBi value, the higher the gain and, as such, the more acute the angle of coverage.

#### Access Point Antennas

<table>
<thead>
<tr>
<th>Feature</th>
<th>AIR-ANT5959</th>
<th>AIR-ANT3195</th>
<th>AIR-ANT2012</th>
<th>AIR-ANT3213</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Diversity omni-directional ceiling mount</td>
<td>3 dBi Patch Wall Mount Antenna</td>
<td>Diversity patch wall mount</td>
<td>Indoor, unobtrusive medium-range antenna</td>
</tr>
<tr>
<td>Application</td>
<td>Indoor/unobtrusive antenna, best for ceiling mount. Excellent throughput and coverage solution in high multipath cells and dense.</td>
<td>Indoor/Outdoor directional antenna</td>
<td>Indoor/outdoor, unobtrusive medium range antenna</td>
<td>Indoor, unobtrusive medium-range antenna</td>
</tr>
<tr>
<td>Approximate Indoor Range at 1 Mbps¹</td>
<td>300 ft (91 m)</td>
<td>240 ft (73 m)</td>
<td>547 ft (167 m)</td>
<td>497 ft (151 m)</td>
</tr>
<tr>
<td>Approximate Indoor Range at 11 Mbps¹</td>
<td>150 ft (45 m)</td>
<td>80 ft (24 m)</td>
<td>167 ft (51 m)</td>
<td>142 ft (44 m)</td>
</tr>
<tr>
<td>Cable Length</td>
<td>3 ft (0.91 m)</td>
<td>12 ft</td>
<td>3 ft (0.91 m)</td>
<td>3 ft (0.91 m)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>5.3 x 2.8 x 0.9 in. (13.5 x 7.1 x 2.3 cm)</td>
<td>4 x 5 in. (9.7 x 13 cm)</td>
<td>4.76 x 6.69 x 0.22 in. (12.14 x 10 x 0.55 cm)</td>
<td>4 x 5 in. (9.7 x 13 cm)</td>
</tr>
<tr>
<td>Weight</td>
<td>0.3 lbs. (0.14 kg)</td>
<td>4.9 oz. (139 g)</td>
<td>9.6 oz. (272 g)</td>
<td>1 lb. (460 g)</td>
</tr>
</tbody>
</table>

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.)

<table>
<thead>
<tr>
<th>Feature</th>
<th>AIR-ANT1728</th>
<th>AIR-ANT4941</th>
<th>AIR-ANT3549</th>
<th>AIR-ANT1729</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>High gain omni-directional ceiling mount</td>
<td>2.2 dBi dipole antenna</td>
<td>Patch wall mount</td>
<td>Patch wall mount</td>
</tr>
<tr>
<td>Application</td>
<td>Indoor medium-range antenna, typically hung from crossbars of drop ceilings</td>
<td>Indoor omni-directional coverage</td>
<td>Indoor, unobtrusive, long-range antenna (may also be used as a medium-range bridge antenna)</td>
<td>Indoor, unobtrusive, medium-range antenna (may also be used as a medium-range bridge antenna)</td>
</tr>
<tr>
<td>Approximate Indoor Range at 1 Mbps¹</td>
<td>497 ft (151 m)</td>
<td>350 ft (107 m)</td>
<td>Access Point: 700 ft (213 m)</td>
<td>Access Point: 542 ft (165 m)</td>
</tr>
<tr>
<td>Approximate Indoor Range at 11 Mbps¹</td>
<td>142 ft (44 m)</td>
<td>130 ft</td>
<td>Access Point: 200 ft (61 m) Bridge: 2.0 miles (3.2 km)</td>
<td>Access Point: 155 ft (47 m) Bridge: 1.1 miles (1.8 km)</td>
</tr>
<tr>
<td>Cable Length</td>
<td>3 ft (0.91 m)</td>
<td>N/A</td>
<td>3 ft (0.91 m)</td>
<td>3 ft (0.91 m)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>9 in. (22.86 cm) Length: 1 in. (2.5 cm)</td>
<td>5.5 in.</td>
<td>5.5 x 5 in. (12.4 x 12.4 cm)</td>
<td>4 x 5 in. (9.7 x 13 cm)</td>
</tr>
<tr>
<td>Weight</td>
<td>4.6 oz. (131 g)</td>
<td>1.1 oz.</td>
<td>5.3 oz. (150 g)</td>
<td>4.9 oz. (139 g)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Feature</th>
<th>AIR-ANT2506</th>
<th>AIR-ANT4221</th>
<th>AIR-ANT1949</th>
<th>AIR-ANT3338</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Omnidirectional mast mount</td>
<td>High-gain omnidirectional mast mount</td>
<td>Yagi mast mount</td>
<td>Solid dish</td>
</tr>
<tr>
<td><strong>Application</strong></td>
<td>Outdoor short-range point-to-multipoint applications</td>
<td>Outdoor medium-range point-to-multipoint applications</td>
<td>Outdoor medium-range directional connections</td>
<td>Outdoor long-range directional connections</td>
</tr>
<tr>
<td><strong>Approximate Indoor Range at 1 Mbps</strong></td>
<td>5000 ft. (1525m)</td>
<td>4.6 miles (7.4 km)</td>
<td>6.5 miles (10.5 km)</td>
<td>25 miles (40 km)</td>
</tr>
<tr>
<td><strong>Approximate Indoor Range at 11 Mbps</strong></td>
<td>1580 ft. (480m)</td>
<td>1.4 miles (2.3 km)</td>
<td>2.0 miles (3.3 km)</td>
<td>11.5 miles (18.5 km)</td>
</tr>
<tr>
<td><strong>Cable Length</strong></td>
<td>3 ft. (0.9m)</td>
<td>1 ft. (0.3m)</td>
<td>1.5 ft. (0.46m)</td>
<td>2 ft. (0.61m)</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>Length: 12 in. (33 cm) Diameter: 1 in. (2.5 cm)</td>
<td>Length: 40 in. (101 cm) Diameter: 1.3 in. (3 cm)</td>
<td>Length: 24 in. (61 cm) Diameter: 3 in. (7.6 cm)</td>
<td></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>6 oz. (17g)</td>
<td>1.5 lb. (0.68 kg)</td>
<td>1.5 lb. (0.68 kg)</td>
<td>11 lb. (5 kg)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Feature</th>
<th>AIR-CAB020LL-R</th>
<th>AIR-CAB050LL-R</th>
<th>AIR-CAB100ULL-R</th>
<th>AIR-CAB150ULL-R</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cable Length</strong></td>
<td>20 ft. (6m)</td>
<td>50 ft. (15m)</td>
<td>100 ft. (30m)</td>
<td>150 ft. (45m)</td>
</tr>
<tr>
<td><strong>Transmission Loss</strong></td>
<td>1.3 dB</td>
<td>3.4 dB</td>
<td>4.4 dB</td>
<td>6.6 dB</td>
</tr>
</tbody>
</table>

### Cisco Aironet Accessories

<table>
<thead>
<tr>
<th>Feature</th>
<th>AIR-ACC2537-060</th>
<th>AIR-ACC3354</th>
<th>AIR-ACC2662</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>60 in. (152 cm) bulkhead extender</td>
<td>Lightning arrester w/ grounding ring</td>
<td>Yagi articulating mount</td>
</tr>
<tr>
<td><strong>Application</strong></td>
<td>Flexible antenna cable that extends access point cabling typically within an enclosure</td>
<td>Helps prevent damage due to lightning-induced surges or static electricity</td>
<td>Adds swiveling capability to mast-mounted yagi antennas</td>
</tr>
</tbody>
</table>

### Selected Part Numbers and Ordering Information

### Cisco Aironet Accessories

- AIR-ACC3662 Yagi Antenna Articulating Mount
- AIR-ACC3354 Lightning Arrester 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. (45m) low-loss antenna cable
- AIR-ANT2012 6.5 dBi Diversity Patch Wall Mount Antenna
- AIR-ANT2506 5.2 dBi Omnidirectional Mast Mount Antenna
- AIR-ANT1949 13.5 dBi Yagi Mast Mount Antenna
- AIR-ANT3338 3.0 dBi Office Ceiling Antenna
- AIR-ANT3549 3.0 dBi Indoor Omni Ceiling Antenna
- AIR-ANT5959 2.2 dBi Dipole Antenna (Standard Rubber Duck)

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# IP Telephony, Video, & Web Collaboration

## Campus IP Telephony, Video, & Web Collaboration at a Glance

<table>
<thead>
<tr>
<th>Product</th>
<th>Features</th>
<th>Page</th>
</tr>
</thead>
</table>
| 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 | 4-3 |
| Cisco CallManager 3.3 | The software-based call processing and call control component of Cisco's IP Telephony solution  
- Resides on Cisco Media Convergence Servers (MCS), Cisco ICS7750, or selected third-party servers (CallManager 3.3) | 4-4 |
| CiscoWorks IP Telephony Environment Monitor | A suite of management applications that help 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 | 9-18 |
| Cisco IP Contact Center (IPCC) Enterprise Edition | Cisco IP Contact Center (IPCC) Enterprise Edition delivers intelligent call routing, network-to-desktop CTI, and multi-channel media contact management to contact center agents over an IP network. It includes several applications, including the following:  
- CallManager  
- Cisco Intelligent Contact Manager (I CM)  
- Cisco IP IVR/IP Queue Manager | 4-8 |
| Cisco IP IVK | Cisco IP IVK, a new world interactive voice response (IVR) solution, provides a feature-rich foundation for the creation of an IP-based IVR that is open and expandable. Cisco IP IVK has the following key features:  
- Provides a multimedia (voice/data/Web) IP-empowered application-generation environment  
- Can be deployed anywhere in the IP network  
- Offers Web-based activation and administration | 4-10 |
| Cisco IP Contact Center Express Edition (formerly IP ICD) | Cisco IPCC Express is a software-based ACD, IVR, and CTI application for mid-sized contact centers with Cisco IP Telephony networks based on Cisco AVVID.  
- Cisco IPCC Express is an open systems platform allowing ease of configuration.  
- It has a graphically driven workflow editor providing a common interface for creating interactions, or call flows, and creates business logic between IVR and ACD functions. | 4-9 |
| Cisco Unity—Unified Messaging and Voice Mail | Voice mail and unified messaging system delivers all messages into single inbox for access via phone, email or Internet | 4-11 |
| 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 | 4-13 |
| IP Telephony Applications |  
- Cisco Survivable Remote Site Solution (SRES) Telephony Software—IDS 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 CallManager is unreachable  
- Cisco IP Phone Messenger—sends Instant Messages (IM) between Cisco IP Phones and Lotus Sametime or M S Messenger desktop IM clients  
- Cisco IP SoftPhone—Windows-based application for PC, allows users to make and receive calls from PC without a dedicated phone  
- Cisco Conference Connection (CCC)—enables enterprises to bring geographically dispersed employees and customers together to facilitate meetings and collaboration. CCC provides a cost-effective and time-efficient method of doing business without the hassle of travel. | 4-12 |
## Chapter 4 IP Telephony, Video, & Web Collaboration

### Campus IP Telephony, Video, & Web Collaboration at a Glance

<table>
<thead>
<tr>
<th>Product</th>
<th>Features</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco MCS 7800 Series Media Convergence Servers</td>
<td>High availability server platform for Cisco IP telephony systems&lt;br&gt;Turnkey solution, includes CallManager or other software&lt;br&gt;For large- and medium-sized enterprise IP telephony deployments</td>
<td>4-17</td>
</tr>
<tr>
<td>Cisco ICS 7750 Integrated Communications System</td>
<td>A branch office/midmarket business with standalone IP telephony needs from 35-500 users&lt;br&gt;An end-user customer or partner who wants a single &quot;box&quot; (or platform) IP telephony solution to ease deployment and/or to standardize on voice configurations across multiple sites&lt;br&gt;An existing multiservice data network customer who wants to add IP telephony functionality to create a converged network solution</td>
<td>4-18</td>
</tr>
<tr>
<td>Cisco IAD 2400 Series Integrated Access Device</td>
<td>Business class fixed-configuration Integrated Access Device (IAD)&lt;br&gt;Delivers packet or TDM voice and data over single WAN uplink&lt;br&gt;OSD Telephony Service (OTS) provides local IAD-based call processing to offer key switch functionality, ideal for small offices (5-24 phones)&lt;br&gt;IP-based keyswitch functionality, ideal for small offices (5-20 phones) who do not need Cisco CallManager capabilities&lt;br&gt;Supports standard phones and IP phones on a single platform&lt;br&gt;8 FXS/16 FXS/16FXO analog voice ports and 1 T1 digital voice port models&lt;br&gt;WAN Interfaces: T1, POTS, FR, ATM, and DSL/ADSL, and SHDSL</td>
<td>4-18</td>
</tr>
<tr>
<td>Cisco Voice Gateways</td>
<td>The Cisco Vo2M dedicated voice gateway provides connectivity between IP networks and legacy telephony systems/PSTN&lt;br&gt;Support various types of interfaces, including T1 and E1&lt;br&gt;Fully manageable by Cisco CallManager, a CLI interface via Telnet, or via SNMP</td>
<td>4-22</td>
</tr>
<tr>
<td>Cisco IP/VC 3500 Series Videoconferencing Products</td>
<td>Videoconferencing over IP solution&lt;br&gt;Cost-effective, easy-to-manage&lt;br&gt;Translates between H.323 and H.320 systems&lt;br&gt;Management and Quality of Service</td>
<td>4-22</td>
</tr>
<tr>
<td>Cisco IP/TV 3400 Series Video Servers</td>
<td>High-quality video communications over enterprise networks&lt;br&gt;Support live and scheduled video, video on demand&lt;br&gt;Enable training, corporate communications, business TV, and distance learning</td>
<td>4-25</td>
</tr>
<tr>
<td>Cisco Web Collaboration Option</td>
<td>Web-based collaboration&lt;br&gt;Share any Windows desktop application&lt;br&gt;Ideal for both sales- and service-oriented customer service organizations</td>
<td>4-24</td>
</tr>
<tr>
<td>Cisco E-mail Manager</td>
<td>Automates the process of tracking and responding to inbound email&lt;br&gt;Automatically assigns email requests to the most appropriate agent&lt;br&gt;Graphical rules engine makes it easy to define custom rules for the processing of email</td>
<td>4-25</td>
</tr>
<tr>
<td>Cisco Emergency Responder</td>
<td>Works with Cisco CallManager to automatically provide E-1-1 features in North America, and is compatible with any emergency number including 112 in Europe, 999 in UK, and 000 in Australia&lt;br&gt;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&lt;br&gt;Provides real-time alert notifications to on-site or contracted security groups, to facilitate a timely response to emergency situations.</td>
<td>4-25</td>
</tr>
<tr>
<td>Cisco ATA Series of Analog Telephone Adaptors</td>
<td>Turns any analog telephone into an IP telephone. Each of the two voice ports supports independent telephone numbers, providing two separate lines&lt;br&gt;Interoperable with multiple standards including H.323, SIP, MGCP, and SCCP&lt;br&gt;Enables analog devices, such as phones and fax machines, to support Voice over IP services by converting the analog signal into an IP signal</td>
<td>4-27</td>
</tr>
<tr>
<td>Cisco CTE-1400 Series Content Transformation Engine</td>
<td>Transforms Web content for display and interaction on small screen mobile devices and IP Telephones&lt;br&gt;Supports a broad range of devices&lt;br&gt;Transforms existing content&lt;br&gt;GUI/Console Administrative Tool</td>
<td>6-13</td>
</tr>
</tbody>
</table>

1. IP Keyswitch capabilities also available with 2600/2600XM and 3600 series routers; see IP Keyswitch Web site: http://www.cisco.com/go/keyswitch
2. 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.
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 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, 7910G, 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 7935, 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 make the telephone simpler to use by presenting calling options based on context
- Open APIs using XML to deliver applications to the display
- Automatic phone discovery, VLAN configuration, and registration
- Quality of Service (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 are available simply by pressing a button on your Cisco IP telephone
- 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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco IP Phone 7902G</th>
<th>Cisco IP Phone 7905G</th>
<th>Cisco IP Phone 7912G</th>
<th>Cisco IP Phone 7910G and 7910G+SW</th>
<th>Cisco IP Phone 7940G</th>
<th>Cisco IP Phone 7960G</th>
<th>Cisco 7914 Expansion Module</th>
<th>Cisco IP Conference Station 7935</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display</td>
<td>None</td>
<td>Pixel-Based</td>
<td>Pixel-Based</td>
<td>Pixel-Based</td>
<td>Pixel-Based</td>
<td>Pixel-Based</td>
<td>Character-Based</td>
<td>Character-Based</td>
</tr>
<tr>
<td>Dynamic Soft Keys</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>Inline Power</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>10/100Base-T Ethernet Switch</td>
<td>No</td>
<td>No</td>
<td>Yes, RJ45+SW</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>N/A</td>
</tr>
<tr>
<td>Lines</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>14</td>
<td>1</td>
</tr>
</tbody>
</table>
Cisco CallManager 3.3

Cisco CallManager call-processing software extends enterprise telephony features and capabilities to enterprise LANs and packet telephony network devices such as IP phones, media processing devices, voice-over-IP (VoIP) gateways, and multimedia applications. Additional data, voice, and video services such as unified messaging, multimedia conferencing, collaborative contact centers, and interactive multimedia response systems interact with the IP telephony solution through CallManager’s open telephony application programming interfaces (API). Cisco CallManager is installed on the Cisco Media Convergence Server (MCS) and selected third-party servers. It ships with a suite of integrated voice applications and utilities, including the Cisco Attendant Console—a software-only manual attendant console; a conferencing application; and administrative reporting tools. For more VoIP network management features, see the CiscoWorks Manager IP Telephony Environment Monitor, page 9-18.

Cisco CallManager version 3.3 provides a scalable, distributable, and highly available enterprise IP telephony call-processing solution. Multiple servers are clustered and managed as a single entity; yielding scalability of up to 30,000 users per cluster. By interlinking multiple clusters, system capacity can be increased to as many as one million users in a 100-site system. Clustering aggregates the power of multiple,

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco IP Phone 7910G and 7910G+SW</th>
<th>Cisco IP Phone 7940G</th>
<th>Cisco IP Phone 7960G</th>
<th>Cisco IP Conference Station 7935</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speaker Phone</td>
<td>No</td>
<td>Monitor Only</td>
<td>Monitor Only</td>
<td>Yes</td>
</tr>
<tr>
<td>Headset Jack</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>N/A</td>
</tr>
<tr>
<td>3rd Party XML</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Selected Part Numbers and Ordering Information

Cisco 7900 Series IP Power and Phones

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 CallManager 3.3
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 and scalability. Call admission control ensures that voice quality of service (QoS) is maintained across constricted WAN links, and automatically diverts calls to alternative Public Switched Telephone Network (PSTN) routes when WAN bandwidth is not available. A Web-browsable interface to the configuration database enables remote device and system configuration.

**Key Features**

- Cisco CallManager includes a suite of integrated voice applications that perform voice conferencing and manual attendant console functions, eliminating the need for special-purpose voice processing hardware
- 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 through 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

**Specifications**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco CallManager 3.3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Platforms</strong></td>
<td>Media Convergence Server (MCS)</td>
</tr>
<tr>
<td></td>
<td>Integrated Communications Server (ICS-7750)</td>
</tr>
<tr>
<td></td>
<td>Selected third-party servers</td>
</tr>
<tr>
<td><strong>Pre-Installed Software</strong></td>
<td>Cisco CallManager version 3.3 (call processing and call-control application)</td>
</tr>
<tr>
<td></td>
<td>Cisco CallManager version 3.3 configuration database (contains system and device configuration information, including dial plan)</td>
</tr>
<tr>
<td></td>
<td>Cisco CallManager Administration software</td>
</tr>
<tr>
<td></td>
<td>Cisco Conference Bridge</td>
</tr>
<tr>
<td></td>
<td>Cisco Attendant Console</td>
</tr>
<tr>
<td></td>
<td>Bulk Administration Tool (BAT)</td>
</tr>
<tr>
<td></td>
<td>CDR Analysis and Reporting (CAR) tool</td>
</tr>
<tr>
<td></td>
<td>Real Time Monitoring Tool (RTMT)</td>
</tr>
<tr>
<td><strong>Sample Subset of System Capabilities</strong></td>
<td>H.323 scalability improvements - 1,000 H.323 calls per CallManager server in cluster</td>
</tr>
<tr>
<td></td>
<td>Virus checker certification</td>
</tr>
<tr>
<td></td>
<td>Cisco Intrusion Detection System (IDS) Host-Based Sensor certification</td>
</tr>
</tbody>
</table>
### Summary of Administrative Features

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<thead>
<tr>
<th>Feature</th>
<th>Cisco CallManager 3.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application discovery and registration to SNMP manager</td>
<td></td>
</tr>
<tr>
<td>Automated Alternate Routing Groups</td>
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<tr>
<td>Bulk Administration</td>
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<tr>
<td>Call Back</td>
<td></td>
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<tr>
<td>Call Detail Records (CDR)</td>
<td></td>
</tr>
<tr>
<td>Call forward reason code delivery</td>
<td></td>
</tr>
<tr>
<td>Centralized, replicated configuration database, distributed Web-based management viewers</td>
<td></td>
</tr>
<tr>
<td>Configurable and default ringer WAV files per phone</td>
<td></td>
</tr>
<tr>
<td>Configuration database API</td>
<td></td>
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<tr>
<td>Database automated change notification</td>
<td></td>
</tr>
<tr>
<td>Date/time display format configurable per phone</td>
<td></td>
</tr>
<tr>
<td>Debug information to common syslog file</td>
<td></td>
</tr>
<tr>
<td>Device addition through wizards</td>
<td></td>
</tr>
<tr>
<td>Device downloadable feature upgrades—Phones, hardware transcoder resource, hardware conference bridge resource, VoIP gateway resource</td>
<td></td>
</tr>
<tr>
<td>Device groups and pools for large system management</td>
<td></td>
</tr>
<tr>
<td>Device mapping tool-IP address to MAC address</td>
<td></td>
</tr>
<tr>
<td>Distinctive ring per line</td>
<td></td>
</tr>
<tr>
<td>Dynamic Host Configuration Protocol (DHCP) block IP assignment-phones and gateways</td>
<td></td>
</tr>
<tr>
<td>Dialed number translation table (inbound/outbound translation)</td>
<td></td>
</tr>
<tr>
<td>Dialed Number Identification Service (DNIS)</td>
<td></td>
</tr>
<tr>
<td>Enhanced 911 service</td>
<td></td>
</tr>
<tr>
<td>H.323-compliant interface to H.323 clients, gateways, and gatekeepers</td>
<td></td>
</tr>
<tr>
<td>Individual line Call Waiting Alert Configuration</td>
<td></td>
</tr>
<tr>
<td>J TAPI 1.2 computer telephony interface</td>
<td></td>
</tr>
<tr>
<td>LDAP version 3 directory interface to selected vendor's LDAP directories</td>
<td></td>
</tr>
<tr>
<td>• Active Directory</td>
<td></td>
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<tr>
<td>• Netscape Directory Server</td>
<td></td>
</tr>
<tr>
<td>Manager Assistant</td>
<td></td>
</tr>
<tr>
<td>Mappable softkeys</td>
<td></td>
</tr>
<tr>
<td>MGCP signaling and control to selected Cisco VoIP gateways</td>
<td></td>
</tr>
<tr>
<td>Mulitlevel Administration Access (MLA)</td>
<td></td>
</tr>
<tr>
<td>Native supplementary services support to Cisco H.323 gateways</td>
<td></td>
</tr>
<tr>
<td>Network Specific Facilities Paperless phone DNIS-display driven button labels on phones</td>
<td></td>
</tr>
<tr>
<td>Performance monitoring SNMP statistics from applications to SNMP manager or to operating system</td>
<td></td>
</tr>
<tr>
<td>Performance Monitor</td>
<td></td>
</tr>
<tr>
<td>QoS statistics recorded per call</td>
<td></td>
</tr>
<tr>
<td>Q.SIG Support</td>
<td></td>
</tr>
<tr>
<td>Redirected DNIS (RDNIS), inbound, outbound (to H.323 devices)</td>
<td></td>
</tr>
<tr>
<td>Select specified line appearance to ring; Select specified phone to ring</td>
<td></td>
</tr>
<tr>
<td>Single CDR per cluster</td>
<td></td>
</tr>
<tr>
<td>Single point system/device configuration</td>
<td></td>
</tr>
<tr>
<td>Sortable component inventory list by device, user, or line</td>
<td></td>
</tr>
<tr>
<td>System event reporting-to common syslog or operating system event viewer</td>
<td></td>
</tr>
<tr>
<td>TAPI 2.1 computer telephony interface</td>
<td></td>
</tr>
<tr>
<td>Time-zone configurable per phone</td>
<td></td>
</tr>
<tr>
<td>XML API into IP phones (794X/6X)</td>
<td></td>
</tr>
<tr>
<td>Zero cost automated phone moves; Zero cost phone adds</td>
<td></td>
</tr>
</tbody>
</table>
Summary of User Features

- Answer/answer release
- Auto-answer/intercom
- Call connection
- Call coverage
- Call forward-all (off-net/on-net); Call forward-busy; Call forward-no answer
- Call hold/release
- 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)
- Directory dial from phone-corporate, personal
- Directories-missed, placed, received calls list stored on selected IP phones
- Distinctive ring (on-net vs. off-net); Distinctive ring per phone
- Drop last conference party (ad-hoc conferences)
- Extension mobility support
- Hands-free, full-duplex speakerphone
- HTML help access from phone
- Last number redial (off-net/on-net)
- Message waiting indication
- Multi-party 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, login/logout, 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
- 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
- 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 3.3.
2. Indicates new feature or service for Cisco CallManager version 3.3

For More Information

See the Cisco CallManager Web sites: [http://www.cisco.com/go/callmgr](http://www.cisco.com/go/callmgr)
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, Cisco IPCC Enterprise 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.

Cisco IPCC Enterprise 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. This allows companies to preserve the value of their existing investments in call center products such as ACDs, IVRs, PBXs, etc. while leveraging Cisco’s wide range of solutions to support the same contact center requirements in a converged network environment.

**Key Features**

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

---

1. Abbreviated list of IPCC Features
Chapter 4  IP Telephony, Video, & Web Collaboration

Selected Part Numbers and Ordering Information

Cisco IP Contact Center
IPC-Bundle  Includes: ICM, 1 Call Manager PG, 1 IVR PG, 24 Agent Desktop Licenses, 1 Supervisor Desktop License, 1 System Manager AWS - full, 1 full documentation set plus on-line documentation
IPC-AGTCTD-L  Cisco Toolkit Desktop for IPCC License
IPC-SUPCTS-L  Cisco Toolkit Supervisor for IPCC License
IPC-AGTCAD-L  Cisco Agent Desktop for IPCC License
IPC-AGTCADCTI-L  Cisco Agent Desktop for IPCC with CTI License
IPC-SUPCSD-L  Cisco Supervisor Desktop for IPCC 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

Cisco IPCC Express Edition (Formerly IP ICD)
Cisco IPCC Express Edition is an inexpensive, easy-to-install, and easy-to-use automatic call distributor (ACD) for enterprise organizations. It is seamlessly integrated with all other customer response applications, including Cisco IP Interactive Voice Response (IP IVR) and Cisco IP Automated Attendant (IP AA). Key benefits of IPCC Express include: it provides a low-cost, entry-level ACD that is easy to install, administer, and use; it supports multimedia (voice, data, and Web) access when used with Cisco IP IVR; it provides complete customization tools for call flow scripts; and it supports seamless integration with Cisco customer response applications.
Cisco IPCC Express is available as two packages: Cisco IPCC Express Standard and Cisco IPCC Express Enhanced. The Standard version is priced for entry-level users, allowing you to capture opportunities in the small and medium-size business market segment. The Enhanced version offers a full-featured ACD for entry- to mid-size contact centers. The Enhanced version also provides a migration pathway to Cisco IP Contact Center (IPCC), Cisco’s premier contact center product.

Key Features

• 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
• Common agent and supervisor desktops across all Cisco customer interaction management products including Cisco IPCC Express Standard, Enhanced and Cisco IP Contact Center Enterprise (formerly IPCC)
• Localization
• 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

1. Abbreviated list of IPCC Features
Chapter 4   IP Telephony, Video, & Web Collaboration

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. Written in Java to provide customer flexibility, IVR includes the following features:

- 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 60 ports
- Cisco IP IVR offers enhanced scalability

Selected Part Numbers and Ordering Information

Cisco IP Integrated Contact Distribution (ICD)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICD-3.0-STD-BS SW</td>
<td>Standard ICD 3.0 Standard Bundle</td>
</tr>
<tr>
<td>ICD-3.0-STD-BB</td>
<td>Bid Set ICD 3.0 Standard Bundle</td>
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<td>ICD-3.X-S-AGT1</td>
<td>1 Cisco Standard Agent Desktop ICD 3.X</td>
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<td>ICD-3.X-S-AGT5</td>
<td>5 Cisco Standard Agent Desktops ICD 3.X</td>
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<td>10 Cisco Standard Agent Desktops ICD 3.X</td>
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<td>ICD-3.X-S-SUP1</td>
<td>1 Cisco Standard Supervisor Desktop ICD 3.X</td>
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<tr>
<td>ICD-3.X-S-HIST1</td>
<td>1 Cisco Standard Historical Reporting ICD 3.X</td>
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<tr>
<td>ICD-3.0-ENH-BS</td>
<td>ICD 3.0 Enhanced Bundle</td>
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<td>ICD-3.X-E-AGT1</td>
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<tr>
<td>ICD-3.X-E-AGT5</td>
<td>5 Cisco Enhanced Agent Desktops ICD 3.X</td>
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<tr>
<td>ICD-3.X-E-SUP1</td>
<td>1 Cisco Enhanced Supervisor Desktop ICD 3.X</td>
</tr>
<tr>
<td>ICD-3.X-E-HIST1</td>
<td>1 Cisco Enhanced Historical Reporting ICD 3.X</td>
</tr>
</tbody>
</table>

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 IP Integrated Contact Distribution Web site:
http://www.cisco.com/go/icd
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
- 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 complex TDM telephone networks (multiple dialing domains)
- 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, event logging, and optional software RAID levels 0-5
- 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

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1. Unity will not support Windows NT on the Unity server, although it can be installed into an NT environment.
Specifications

**Cisco Unity—Unified Messaging and Voice Mail**

### Selected Part Numbers and Ordering Information

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

### Cisco Unity Servers

- **UNITY-SVR1400-1A**: Dell 1400; rack-mountable; (W2K included)
- **UNITY-SVR2500A-1A**: Dell 2500; rack-mount; 512MB; RAID 1, 2nd CPU, Win2K
- **UNITY-SVR2500C-2A**: Dell 2500; rack-mount; 1GB; RAID 5, 2nd CPU, Win2K
- **UNITY-SVRX232-1A**: IBM x232 rack; 512MB; RAID 1 (W2K included)
- **UNITY-SVRX232-2A**: IBM x232 rack; 1GB; RAID 5, 2nd CPU (W2K included)
- **UNITY-SVR570-1A**: Compaq ML570 rack; 2GB; RAID 1(x2), RAID 5, Dual CPU, Win2K
- **UNITY-SVR570-2A**: Compaq ML570 rack; 4GB; RAID 1(x2), RAID 5, Quad CPU, Win2K
- **UNITY-SVR7827-1A**: M CS 7827 rack (W2K included)
- **UNITY-SVR7837-1A**: M CS 7837 rack; 512MB; RAID 1 (W2K included)
- **UNITY-SVR7847-2A**: M CS 7847 rack; 1GB; RAID 5, 2nd CPU (W2K included)
- **UNITY-EXP-CHAS=x**: Expansion chassis

### Cisco Unity 3.1 Unified Messaging and Voicemail Software

- **UNITYU50-4-3.1**: Unity Unified Messaging, 50 users (includes 4 sessions)
- **UNITYU100-8-3.1**: Unity Unified Messaging, 100 users (includes 8 sessions)
- **UNITYU200-12-3.1**: Unity Unified Messaging, 200 users (includes 12 sessions)
- **UNITYU300-16-3.1**: Unity Unified Messaging, 300 users (includes 16 sessions)
- **UNITYU500-24-3.1**: Unity Unified Messaging, 500 users (includes 24 sessions)
- **UNITYU875-32-3.1**: Unity Unified Messaging, 875 users (includes 32 sessions)
- **UNITYU1175-40-3.1**: Unity Unified Messaging, 1175 users (includes 40 sessions)
- **UNITYU1600-48-3.1**: Unity Unified Messaging, 1600 users (includes 48 sessions)
- **UNITYU2200-60-3.1**: Unity Unified Messaging, 2200 users (includes 60 sessions)
- **UNITYU2950-72-3.1**: Unity Unified Messaging, 2950 users (includes 72 sessions)
- **UNITYV50-4-3.1**: Unity Voice Messaging, 50 users (includes 4 sessions)
- **UNITYV100-8-3.1**: Unity Voice Messaging, 100 users (includes 8 sessions)
- **UNITYV200-12-3.1**: Unity Voice Messaging, 200 users (includes 12 sessions)
- **UNITYV300-16-3.1**: Unity Voice Messaging, 300 users (includes 16 sessions)
- **UNITYV500-24-3.1**: Unity Voice Messaging, 500 users (includes 24 sessions)
- **UNITYV875-32-3.1**: Unity Voice Messaging, 875 users (includes 32 sessions)
- **UNITYV1175-40-3.1**: Unity Voice Messaging, 1175 users (includes 40 sessions)
- **UNITYV1600-48-3.1**: Unity Voice Messaging, 1600 users (includes 48 sessions)
- **UNITYV2200-60-3.1**: Unity Voice Messaging, 2200 users (includes 60 sessions)
- **UNITYV2950-72-3.1**: Unity Voice Messaging, 2950 users (includes 72 sessions)

### Cisco Unity Languages and Real Speak TTS

- **UNITY-RS-2ML**: Unity, 2-port Real Speak TTS, US Eng, UK, Fr, Ger, Euro Sp
- **UNITY-RS-4ML**: Unity, 4-port Real Speak TTS, US Eng, UK, Fr, Ger, Euro Sp
- **UNITY-RS-6ML**: Unity, 6-port Real Speak TTS, US Eng, UK, Fr, Ger, Euro Sp
- **UNITY-UMLANG=x**: Multiple Language support
- **UNITY-TWOLANG=x**: Add support for a second language
- **UNITY-AMIS=x**: Unity, AMIS-A networking

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For More Information

See the Cisco Unity site: [http://www.cisco.com/go/unity](http://www.cisco.com/go/unity)
Cisco Personal Assistant

Cisco Personal Assistant streamlines communications with personal call rules, speech recognition, 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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco Personal Assistant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform</td>
<td>Cisco Media Convergence Server: MCS-7835H-2.4-EV1 and MCS-7835H-2.2-EV1</td>
</tr>
<tr>
<td>Web Server Requirements</td>
<td>Basic Web Server: Microsoft IIS 4.0 or later</td>
</tr>
<tr>
<td>Services Platform</td>
<td>Separate server for Cisco Personal Assistant Server and Speech Recognition Server</td>
</tr>
<tr>
<td>Software Compatibility</td>
<td>Cisco CallManager 3.1+, 3.2+, and 3.3+; Cisco Unity 2.46+, 3.0+, and 4.0+ for voice-mail features; Microsoft Exchange 5.5 and Exchange 2000 for calendar, e-mail, contact synchronization features</td>
</tr>
</tbody>
</table>
Additional Cisco IP Telephony Applications

Cisco SRS Telephony

Survivable Remote Site Telephony (SRS Telephony) 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 SRS Telephony-enabled router will take over and provide basic telephony service (including off-net calls to 911). Introduced in Cisco IOS Release 12.1.5YD, the application is ideal for enterprise organizations looking to cost-effectively deploy IP telephony in their branch office location. Cisco IOS Release 12.2(13)T added SRS Telephony 2.0 features on Cisco 1751, 1760, 2600, 2600XM, 2691, 3640/3640A, 3660, and Cisco 3725/3745 routers.

SRS Telephony 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

SRS Telephony 2.1 features: International language support; Call forward no-answer/busy to Unity server with Personal Greeting; Cisco 7914 and 7935 support; VG248 support

For More Information
See the Cisco SRS Telephony Web site: http://www.cisco.com/go/srs
Cisco IP Phone Messenger

The Cisco IP Phone Messenger (IPPM) is a productivity application, providing enhanced, real-time collaboration for Cisco AVVID IP Communications systems. Cisco IPPM extends the benefits of Instant Messaging and Presence to Cisco CallManager networks, allowing users to send and receive instant messages on Cisco 7940 and 7960 IP phones. Cisco IPPM interworks with IBM Lotus Sametime and MSN Messenger clients and supports the IETF SIMPLE (RFC-3428) protocol for instant messaging and presence. IPPM 1.1 requires Cisco CallManager release 3.2 or later and is supported on the Cisco 7825 and 7835 Series Media Convergence Servers.

For More Information

See the Cisco IP Communications Web site:
http://www.cisco.com/go/ipcommunications

Cisco IP SoftPhone

Cisco IP SoftPhone 1.3 is a PC based application that allows you to use your phone extension from wherever you connect to your corporate IP network, even over the Internet when using a VPN client.

It’s dual mode operation allows you to either control a physical IP phone, or perform all the functions of a phone in standalone mode using your PC’s soundcard or a USB audio handset or headset.

Selected Part Numbers and Ordering Information

For More Information

See the Cisco IP SoftPhone Web site: http://www.cisco.com/go/softphone

Cisco IP Manager Assistant

Cisco IP Manager Assistant is a tool that allows an assistant to provide call coverage for up to five managers simultaneously. When a user is configured as an IPMA manager, they are associated with a primary and secondary assistant. The configured manager is always logged onto the service and selects the preferred assistant from the 7960 services menu. Features available to the manager are initiated from softkeys on the manager’s phone. Assistant user features are initiated and managed from a PC-based application named the Assistant Console.

1. IP Manager Assistant is available as part of Cisco CallManager 3.3 for no additional charge.

Additional Cisco IP Telephony Applications
Chapter 4 IP Telephony, Video, & Web Collaboration

Key Features

• Manager tools: 7960 IP phone—selection of assistant from pre-configured list; Divert All, Immediate Divert, Transfer to Voice Mail, Intercept, DND, SetWatch, Assistant Watch, Call Filtering feature invocation; display of toggled feature status for Divert All, Filtering, DND, Assistant Watch and Assistant availability; speed dial and line appearance configuration for intercom functionality; Manager Desktop—secure, browser-based access to configuration for default assistant assignment, Divert All target, Immediate Divert target and filter list (CLID) configuration.

• Admin Assistant Tools: 7960 IP Phone/7914 line extender—speed dial and line appearance configuration for intercom functionality; 7960 IP phone—invocation of new softkey features including Transfer to Voice Mail and Immediate Divert, speed dial to manager’s intercom line; Assistant Console application—Windows application installed on assistant PC. GUI consistent with CallManager Attendant Console application. User-sizeable application window and panes.

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco IP Manager Assistant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform</td>
<td>Media Convergence Server (MCS)</td>
</tr>
<tr>
<td>Software Compatibility</td>
<td>Cisco CallManager version 3.3</td>
</tr>
<tr>
<td></td>
<td>Assistant Console Application—Microsoft Windows 98, NT desktop, ME, 2000 Desktop and XP</td>
</tr>
</tbody>
</table>

For More Information

See the Cisco Media Convergence Server Web site: [http://www.cisco.com/go/ipma](http://www.cisco.com/go/ipma)

Cisco Conference Connection

Cisco Conference Connection (CCC) is designed for small to medium enterprises and remote offices of larger enterprises. Cisco Conference Connection facilitates relevant participation regardless of location, enables faster decisions, and eliminates travel cost and time and disruptions caused by requirements for a physical conference room presence. Typical applications include service calls, project management, sales reviews, corporate announcements, customer and employee training, and other business meetings. This application is ideal for enterprises trying to increase productivity while reducing expense. Simple web-based interface enables employees to manage their conference schedules and eliminates the service charges to conference service providers.

For More Information

Cisco MCS 7800 Series Media Convergence Servers

Cisco MCS 7815I-2000
The Cisco MCS 7815I-2000 provides an entry level tower server equipped with an Intel Pentium™ 4 2000MHz processor, 40GB ATA hard drive and single non-hot swap power supply. An optional tape backup is available on some models of the MCS 7815I-2000.

Cisco MCS 7825H-2266
The Cisco MCS 7825H-2266 provides an entry level rack mount server that occupies only one rack mounting space. This server is equipped with an Intel Pentium™ 4 2266MHz processor, 40GB ATA hard drive and a single non-hot swap power supply. An optional tape backup is available on some models of the MCS 7825H-2266.

Cisco MCS 7835H-2400 and Cisco MCS 7835I-2400
These Cisco MCS platforms provide a highly available mid-level rack mounted server solution that is equipped with an Intel Prestonia Xeon™ 2400MHz 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 fans and redundant hot swap power supplies. An optional tape backup is available for some models of the MCS 7835H-2400 and MCS 7835I-2400.

Cisco MCS 7845H-2400 and Cisco MCS 7845I-2400
These Cisco MCS platforms provide a powerful and highly reliable high level rack mounted server solution that is equipped with two Intel Prestonia Xeon™ 2400MHz 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 some models of the MCS 7845H-2400 and MCS 7845I-2400.

Specifications

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Intel Pentium® 4 2000MHz processor</td>
<td>Intel Xeon® 2400MHz processor</td>
<td>Dual Intel Xeon® 2400MHz processor</td>
<td>Dual Intel Xeon® 2400MHz processor</td>
<td>Dual Intel Xeon® 2400MHz processor</td>
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<td>512KB L2 Cache</td>
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<td>2U Rack Mount System</td>
<td>2U Rack Mount System</td>
<td>2U Rack Mount System</td>
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<tr>
<td>DVD Drive</td>
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<tr>
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<td>Intel RAID Controller</td>
<td>Dual Intel RAID Controller</td>
<td>Dual Intel RAID Controller</td>
<td>Dual Intel RAID Controller</td>
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<tr>
<td>Tower System with optional rack mount kit</td>
<td>Tower System with optional rack mount kit</td>
<td>Tower System with optional rack mount kit</td>
<td>Tower System with optional rack mount kit</td>
<td>Tower System with optional rack mount kit</td>
<td>Tower System with optional rack mount kit</td>
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</tbody>
</table>
Chapter 4  IP Telephony, Video, & Web Collaboration

Selected Part Numbers and Ordering Information

Cisco Media Convergence Server 7815I-20001
MCS-7815I-2.0-EV1; CS-7815I-2.0-ECS1  Cisco Media Convergence Server 7815I-2000
Cisco Media Convergence Server 7825H-2266
MCS-7825H-2.2-EV1; MCS-7825H-2.2-ECS1  Cisco Media Convergence Server 7825H-2266
Cisco Media Convergence Server 7835H-2400
MCS-7835H-2.4-EV1; MCS-7835H-2.4-ECS1  Cisco Media Convergence Server 7835H-2400
Cisco Media Convergence Server 7835I-2400
MCS-7835I-2.4-EV1; MCS-7835I-2.4-ECS1  Cisco Media Convergence Server 7835I-2400
Cisco Media Convergence Server 7845H-2400
MCS-7845H-2.4-EV1; MCS-7845H-2.4-ECS1  Cisco Media Convergence Server 7845H-2400
Cisco Media Convergence Server 7845I-2400
MCS-7845I-2.4-ECS1; MCS-7845I-2.4-ECS2  Cisco Media Convergence Server 7845I-2400
Cisco Media Convergence Server 7855I-1500
MCS-7855I-1.5-ECS1; MCS-7855I-1.5-ECS2  Cisco Media Convergence Server 7855I-1500
Cisco Media Convergence Server 7865I-1500
MCS-7865I-1.5-ECS1; MCS-7855I-1.5-ECS2  Cisco Media Convergence Server 7865I-1500

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 Media Convergence Server Web site: http://www.cisco.com/go/mcs

Cisco ICS 7750 Integrated Communications System

The Cisco Integrated Communications System (ICS) 7750 is a versatile IP telephony and services solution that brings the benefits of converged IP services to midmarket businesses and enterprise branch offices. Call processing, voice applications, voice gateways and multiservice IP routing are integrated within the system chassis to deliver true convergence while enhancing system manageability. The modular system architecture enables expansion of call processing redundancy, voice gateway capacity, routing capacity, and IP services to deliver system availability and scalability. The ICS 7750 offers quick and cost-effective deployment of powerful applications including unified messaging, integrated Web call centers, and data/voice collaboration.

The Cisco ICS 7750 includes Cisco CallManager software, and combines an IOS-based multiservice router/voice gateway, application servers running core voice applications, Web-based management, and seamless connectivity to Cisco Catalyst switches.

Cisco Systems also offers four Cisco ICS 7750 voice packages for convenient and cost-effective entry points for customers to deploy IP telephony solutions in their LAN networks. These ICS voice packages are pre-configured to simplify ordering of the necessary voice components including voice mail for a mid-market business or branch site.
When to Sell

ICS 7750 Integrated Communications System

When a Customer Needs These Features

- A branch office/midmarket business with standalone IP telephony needs from 35-500 users
- An end-user customer or partner who wants a single “box” or platform IP telephony solution to ease deployment and/or to standardize on voice configurations across multiple sites
- An existing multiservice data network customer who wants to add IP telephony functionality to create a converged network solution

Key Features

- Integrated Functionality (includes CallManager for call-processing, multiservice router/voice gateway, Web-based management, and core voice applications)
- Modular chassis architecture features 6 universal slots with hot swapability
- Modular industry-proven Cisco IOS-based Multiservice Route Processor (MRP) delivers data routing and voice trunking; ensures end-to-end QoS
- Industry-leading selection of WAN Interfaces
- World wide selection of voice interfaces
- Optional redundant power supply and uninterruptible power supply
- Optional integrated voice applications including Unity voice/unified messaging, IVR, contact center
- Integrated Web/GUI-based system management tool for simple monitoring and troubleshooting; Console and Telnet access to CLI system management
- Automated inventory, discovery, and configuration of desktop devices and applications
- Automated fault management, auto-notification of problems via e-mail or pager
- Compatible with SNMP-based management tools including CiscoWorks 2000
- N+1 CallManager clustering enables a backup Cisco CallManager to improve system availability

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco ICS 7750</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Switch Processor</td>
<td>Fixed slot card; autosensing data switch; two-port RJ-45 connectors; included with each ICS 7750 system</td>
</tr>
<tr>
<td>System Alarm Processor</td>
<td>Fixed slot card; two serial ports; one console port; Resource Cards; included with each ICS 7750 system</td>
</tr>
<tr>
<td>System Processing Engine</td>
<td>Universal slot card; Intel Pentium III 700 MHz CPU; 1 GB SRAM; 40 GB hard disk drive</td>
</tr>
<tr>
<td>Multiservice Route Processor</td>
<td>Universal slot card; standard memory: 64 MB DRAM (max. 128 MB; memory upgrade options: 16, 32, 64 MB DRAM; standard flash memory: 16 MB Flash SIMM (max. 80 MB; flash upgrade options: 16, 32, 64 MB Flash; modular voice/WAN interface (WIC) card slots per card; Advanced data networking feature support, including: VPN, IPSec 56 and 3DES, Firewall</td>
</tr>
<tr>
<td>Dimensions and Weight</td>
<td>15.75 x 17.25 x 12.5 in. (40.005 x 43.815 x 31.75 cm)</td>
</tr>
<tr>
<td></td>
<td>1 MRP, 1 SPE, 1 SSP, 1 SAP (a total of 4 cards = 2 fixed cards + 2 universal cards) and 1 power supply; 42 lb (18.9 kg)</td>
</tr>
<tr>
<td>Mounting Options</td>
<td>19 in rack-mount; standalone</td>
</tr>
</tbody>
</table>

Cisco ICS 7750 Integrated Communications System
Chapter 4  IP Telephony, Video, & Web Collaboration

Selected Part Numbers and Ordering Information

Cisco ICS 7750 Voice Packages

ICS-7750-M1V Cisco ICS 7750 FXO-M1 Analog Voice Package provides eight Foreign Exchange Office (FXO) analog voice interfaces, four analog FXS/DID ports, 25 Cisco Unity Voice Messaging mailboxes and support for up to 50 Cisco CallManager devices.

ICS-7750-TV Cisco ICS 7750 T1 Digital Voice Package provides 24 digital voice channels (DS0s), 8 analog FXS interfaces, 50 Cisco Unity Voice Messaging mailboxes and support for up to 500 Cisco CallManager devices.

ICS-7750-BV Cisco ICS 7750 ISDN BRI Voice Package provides four ISDN BRI interfaces (eight B channels), 50 Cisco Unity Voice Messaging mailboxes and support for up to 500 Cisco CallManager devices.

ICS-7750-EV Cisco ICS 7750 E1 Digital Voice Package provides 30 digital voice channels (DS0s), 50 Cisco Unity Voice Messaging mailboxes and support for up to 500 Cisco CallManager devices.

Cisco ICS 7750

ICS-7750 Six-slot ICS chassis, SPE310, SSP, SAP, Power Supply & DOC-CF

SPE310= System Processing Engine 310 (512MB RAM and Windows 2000)

MRP3-8FXO= Multiservice Route Processor 300 with two VIC/WIC slots

MRP3-8FXS= Multiservice Route Processor with 8-ports FXS and one VIC/WIC slot

MRP3-16FXS= Multiservice Route Processor with 16-ports FXO-M1

UPS-BASE-UNIT= UPS with Standard Battery Pack, Ethernet Card (120 V for North America)

UPS-BATT-PACK= Additional External Battery Pack for UPS Base Unit

PWR-AC-7750= AC Power Supply for ICS 7750 Chassis

FAN-TRAY-7750= Fan Tray for ICS-7750

ICS-7750-CHASSIS= ICS-7750 Six-slot chassis & Fan Tray

SAP-7750= System Alarm Processor for ICS 7750

SSP-7750= System Switch Processor for ICS 7750

Cisco ICS 7750 WAN Interface Card (V/CIC) Modules (for MRP cards)

WIC-1DSU-T1= 1-Port T1/Fractional T1 DSU/CSU/WAN Interface Card

WIC-1T= 1-Port Serial (T1/E1) Async/Sync WAN Interface Card

WIC-2A/S= 2-Port Low-speed Serial (up to 128kbps) Async/Sync WAN Interface Card spare

WIC-1DSU-56K= 1-Port 4-Wire 56Kbps DSU/CSU/WAN Interface Card

WIC-1B-S/T= 1-Port ISDN BRI S/T WAN Interface Card (dial and leased line)

WIC-1B-U= 1-Port ISDN BRI U with NT-I WAN Interface Card dial and leased-line

Cisco ICS 7750 Voice Interface Card (VIC) Modules (for MRP cards)

VIC-2FXS Two-port FXS voice/fax interface card

VIC-4FXS/DID Four-port FXS or DID voice/fax interface card (ports can be configured for either FXS or DID)

VIC-2DID Two-port DID voice/fax interface card

VIC-2FXO Two-port FXO voice/fax interface card

VIC-2FXO-M1 Two-port FXO voice/fax interface card with battery reversal and caller ID (for North America)

VIC-2FXO-M2 Two-port FXO voice/fax interface card with battery reversal and caller ID (for Europe)

VIC-2FXO-M3 Two-port FXO voice/fax interface card with battery reversal and caller ID (for Australia)

VIC-2FXO-M4 Four-port FXO voice/fax interface card with battery reversal and caller ID (for North America)

VIC-2EM Two-port E&M voice/fax interface card

VIC-2BRI-N1T1/TE Two-port T1/E1/Fractional T1 multiflex trunk with CSU/DSU (for CAS or PRI)

WVIC-1MFT-T1 One-port T1/Fractional T1 multiflex trunk with CSU/DSU (for CAS or PRI)

WVIC-1MFT-E1 Dual-port E1 multiflex trunk with CSU/DSU (for CAS or PRI)

WVIC-1MFT-E1 One-port E1 multiflex trunk with CSU/DSU (for PRI)

Cisco ICS 7750 Packet Voice/Fax DSP Modules (for MRP cards)

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-16= 16-Channel Packet Voice/Fax DSP Module

PVDM-256K-20= 20-Channel Packet Voice/Fax DSP 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 ICS 7750 Web site: http://www.cisco.com/go/ics7750
Chapter 4  IP Telephony, Video, & Web Collaboration

Cisco IAD 2400 Series Integrated Access Device with IOS Telephony Service (ITS)\(^1\)

The Cisco IAD 2400 Series integrated access devices (IADs) combine data, voice, and video services over IP and ATM networks to provide cost-effective and efficient means of delivering high-speed Internet and voice services to small- and medium-sized business customers—all in a small (1 RU) system. When configured with optional ITS software, the IAD 2400 is ideal for delivering converged LAN IP telephony in small office environments (5-20 phones) that do not require CallManager functionality.

When to Sell

Sell This Product  
Cisco IAD 2400 Series  
Business-class, fully integrated access device  
- IOS Telephony Service (ITS), ideal for small offices (5-20 phones) that do not need Cisco CallManager capabilities  
- Support for standard phones and IP phones on a single platform  
- 8 FXS/16 FXS/16FXS+8FXO analog voice ports and 1 T1 digital voice port models  
- T1-PPP, FR, HDLC, ATM, ADSL, and G.shdsl WAN interfaces  

When a Customer Needs These Features  
Cisco IAD 2400 Series  
Business-class, fully integrated access device  
- IOS Telephony Service (ITS), ideal for small offices (5-20 phones) that do not need Cisco CallManager capabilities  
- Support for standard phones and IP phones on a single platform  
- 8 FXS/16 FXS/16FXS+8FXO analog voice ports and 1 T1 digital voice port models  
- T1-PPP, FR, HDLC, ATM, ADSL, and G.shdsl WAN interfaces  

Key Features

- Combines high-speed Internet access and toll-quality voice services on single IOS-based platform (ITS introduced in Cisco IOS Release 12.1(5)YD)
- Offers TDM, VoIP, and VoATM (AAL2) on a single platform
- Seamless migration of customers from TDM-based GR-303 to packet-based GR-303 networks or to call agent-based networks
- Automated remote installation and configuration enabled via Simple Network-enabled Auto Provisioning (SNAP) and the Cisco Configuration Express tool

Competitive Products

- Adtran: TA850, TA750, TA600
- Carrier Access: Adix 600
- Coppercom: M XR 400
- RAD: LA-110, LA-140
- Verilink (formerly Polycom): NetEngine 6200, 7200
- Wave7 Optics: LMG-B

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>IAD 2421</th>
<th>IAD 2423</th>
<th>IAD 2424</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed LAN Ports</td>
<td>1-port Ethernet (10BASE-T)</td>
<td>Same as IAD 2421</td>
<td>Same as IAD 2421</td>
</tr>
<tr>
<td>Fixed WAN Ports</td>
<td>1-port T1</td>
<td>1-port ADSL</td>
<td>1-port g.shDSL</td>
</tr>
<tr>
<td>Voice Ports</td>
<td>Analog: 8FXS, 16FXS, 16FXS+8FXO; Digital: 1 T1</td>
<td>Analog: 8FXS</td>
<td>Analog: 8FXS, 16FXS, 16FXS+8FXO; Digital: 1 T1</td>
</tr>
<tr>
<td>Processor Speed (type)</td>
<td>80 MHz (RISC)</td>
<td>Same as IAD 2421</td>
<td>Same as IAD 2421</td>
</tr>
<tr>
<td>Flash Memory</td>
<td>16 M B (Default); 32 M B (M ax)</td>
<td>16 M B (Default); 32 M B (M ax)</td>
<td>16 M B (Default); 32 M B (M ax)</td>
</tr>
<tr>
<td>DIMM Memory</td>
<td>64 M B</td>
<td>64 M B</td>
<td>64 M B</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>1.7 x 17.5 x 11.3 in.</td>
<td>Same as IAD 2421</td>
<td>Same as IAD 2421</td>
</tr>
</tbody>
</table>

For More Information

See the Cisco IAD 2400 Web site: [http://www.cisco.com/go/2400](http://www.cisco.com/go/2400)

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\(^1\) IP Keyswitch capabilities also available with 2600 and 3600 series routers; see IP Keyswitch Web site: [http://www.cisco.com/go/keyswitch](http://www.cisco.com/go/keyswitch)
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’s full line of multiservice routers can also add analog and digital voice gateway functionality through the use of network modules and voice interface cards1, such as the Catalyst 6000 Family FXS Analog Interface Module.

Cisco offers the Cisco VG248 dedicated voice gateway.

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 VG248 will generate SMDI for the attached analog ports allowing connection to a Cisco Call Manager network through legacy voicemail systems. It shares existing SMDI based voicemail systems between the Cisco Call Manager and the legacy PBX.

Selected Part Numbers and Ordering Information

Cisco VG248 Voice Gateway
VG248 48 Port Voice over IP analog phone gateway

For More Information

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

Cisco IP/VC 3500 Series Videoconferencing Products

The IP/VC 3500 series is for enterprises and service providers who want a reliable, easy-to-manage, cost-effective network infrastructure for videoconferencing over their IP networks. They consist 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. The Cisco IP/VC product family works with H.323-standards-based videoconference client devices from a variety of vendors and integrates with legacy H.320 networks.

• The Cisco IP/VC 3511 Multipoint Control Unit (MCU) is a 1RU stack/rack-mount system enabling adhoc videoconferences between three or more endpoints. Multiple participants in multiple locations attend the same meeting with real-time interactivity. 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 are also 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

1. Please see the 1700, 2600, 3600, 7200, 5x00 series in Chapter 1—Routers, Chapter 7—Access Products.
Chapter 4  IP Telephony, Video, & Web Collaboration

• The IP/VC 3540 Videoconferencing System integrates multipoint control units, and gateways onto a single platform for cost-effective deployment of IP-centric videoconferencing networks. In addition, the IP/VC 3540 platform offers T.120 data conferencing through an optional collaboration server. Customers can add the Rate Matching module which enhances the video composition of any multipoint conference. Enhanced features such as Rate Matching, a number of robust Continuous Presence formats and audio transcoding are available.

• The Multimedia Conference Manager (MCM) software is 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. 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 IP/VC 3500 series Web site: http://www.cisco.com/go/ipvc

Cisco IP/VC 3500 Series Videoconferencing Products

IPVC-3511-MCU  IPVC 3511 H.323 Videoconference Multipoint Control Unit
IPVC-3521-GW-4B  IPVC 3521 H.320-H323 Videoconferencing Gateway with 4 BRI ports
IPVC-3526-GW-1P  IPVC 3526 H.320-H.323 Videoconferencing Gateway, Gateway 1 Port
IPVC-3540-MCU  IPVC 3540 MCU Module - 30 Sessions - (also available in 60 and 100 session capacities)
IPVC-3540-XAM  IPVC 3540 Audio Transcoder for 30 session MCU (also available for 60 session MCU)
IPVC-3540-RM  IPVC 3540 Rate Matching Module (allows different rates in the same conference)
IPVC-3540-GW2P  IPVC 3540 H.320 to H.323 Gateway Module
IPVC-3540-XAG  IPVC 3540 Gateway Audio Transcoder
IPVC-3540-AS  IPVC 3540 Application Server (CPU required for T.120 Data Conferencing Server
IPVC-3540-DS  IPVC 3540 T.120 Data Conferencing Server software (also available in 60 sessions)
MCM Images  IP/H323 (Routers: 2600, 3600, 3700)
IOS 12.2(11)T  Enterprise Plus/ H323 MCM (Routers: 2600, 3600, 3700)
Enterprise MCM (Routers: 7200)

Cisco IP/TV 3.4

Cisco IP/TV® 3.4 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.

Cisco IP/TV 3.4 are purchased as Cisco IP/TV 3400 Series Server appliances or software for third party servers. 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 3412 Control Server, the IP/TV 3425 and 3425A Broadcast Servers, the IP/TV 3432 Archive Server, and the IP/TV 3417 Video Starter System. This product family offers a range of choices to best suit large-scale enterprise applications, performance requirements, and bandwidth availability.
Web Collaboration—Cisco Web Collaboration Option

The Cisco Web Collaboration Option enables businesses to combine the personal value of human interaction with the information value of the Web-creating a powerful environment for driving increased sales, exceptional service, and customer satisfaction.

The Cisco Web Collaboration Option allows you to add “click-for-help” buttons on your Web site that enable customers to interact with your contact center agents over the Web while conducting a voice conversation (PSTN or Voice over IP [VoIP]) or text chat. Contact center agents and callers can share Web pages-including personalized or dynamically generated pages, complete forms in a collaborative fashion, and share any Windows desktop application using nothing more than a Web browser. By facilitating effective, personalized assistance designed to greatly enhance the customer experience, the Cisco Web Collaboration Option is an ideal solution for both sales- and service-oriented contact centers.

The Cisco Web Collaboration Option can be deployed in a pure IP environment or can be seamlessly integrated with your organization’s existing telephony infrastructure to provide automated, blended delivery of phone and Web-based inquiries.

Selected Part Numbers and Ordering Information

Cisco IP/TV 3400 Series Video Servers

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPTV-3412-CTRL</td>
<td>Cisco IP/TV 3412 Control Server</td>
</tr>
<tr>
<td>IPTV-3425-BCAST-M</td>
<td>Cisco IP/TV 3425 MPEG-1, MPEG-2 Full D1 Broadcast Server</td>
</tr>
<tr>
<td>IPTV-3425A-BCAST-M</td>
<td>Cisco IP/TV 3425 MPEG-1 Broadcast Server</td>
</tr>
<tr>
<td>IPTV-3432-ARCH</td>
<td>Cisco IP/TV 3432 Archive Server</td>
</tr>
<tr>
<td>IPTV-3417-START-M</td>
<td>Starter Kit</td>
</tr>
</tbody>
</table>

Cisco IP/TV Software

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPTV-CM-3.4</td>
<td>IP/TV Content Manager</td>
</tr>
<tr>
<td>IPTV-SERV-3.4</td>
<td>Broadcast/Archive Server</td>
</tr>
<tr>
<td>IPTV-SERV-M P4-3.4</td>
<td>Server w/ Mpeg-4 Card &amp; License</td>
</tr>
<tr>
<td>IPTV-START-HD1-3.4</td>
<td>Starter Kit</td>
</tr>
</tbody>
</table>

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](http://www.cisco.com/go/iptv)

Web Collaboration—Cisco Web Collaboration Option

The Cisco Web Collaboration Option enables businesses to combine the personal value of human interaction with the information value of the Web-creating a powerful environment for driving increased sales, exceptional service, and customer satisfaction.

The Cisco Web Collaboration Option allows you to add “click-for-help” buttons on your Web site that enable customers to interact with your contact center agents over the Web while conducting a voice conversation (PSTN or Voice over IP [VoIP]) or text chat. Contact center agents and callers can share Web pages—including personalized or dynamically generated pages, complete forms in a collaborative fashion, and share any Windows desktop application using nothing more than a Web browser. By facilitating effective, personalized assistance designed to greatly enhance the customer experience, the Cisco Web Collaboration Option is an ideal solution for both sales- and service-oriented contact centers.

The Cisco Web Collaboration Option can be deployed in a pure IP environment or can be seamlessly integrated with your organization’s existing telephony infrastructure to provide automated, blended delivery of phone and Web-based inquiries.

Selected Part Numbers and Ordering Information

Cisco IP/TV 3400 Series Video Servers

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCS-CSSVR</td>
<td>Cisco Web Collaboration and Media Blender Software</td>
</tr>
</tbody>
</table>

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

E-Mail Response Management: Cisco E-mail Manager

Cisco E-Mail Manager is a comprehensive, enterprise-class solution for managing high volumes of customer inquiries submitted to your company mailboxes or Web site. Based on customizable business rules, Cisco E-Mail Manager accelerates the response process by automatically directing messages to the right agent or support team, categorizing and prioritizing messages, suggesting relevant response templates, and, if desired, sending automated replies. A full-featured, browser-based interface provides your agents with the productivity tools and knowledge resources they need to provide fast, accurate and personalized responses to your customers. Cisco E-Mail Manager gives managers the queue management, reporting and outbound marketing tools they need to ensure that desired service standards are met, gain valuable insight into customer needs and generate new revenue opportunities.

Whether you are building a customer support system from the ground up or integrating with existing organizational structures and legacy systems, Cisco E-Mail Manager’s uniquely flexible, extensible and scalable design delivers a cost-effective, easy-to-implement strategy for building customer relationships over the Internet.

Selected Part Numbers and Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEM-SVR-W</td>
<td>Cisco Email Manager Server (Win 2K)</td>
</tr>
<tr>
<td>CEM-AGT</td>
<td>Cisco Email Manager Agent License</td>
</tr>
</tbody>
</table>

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.

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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco Emergency Responder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported Platform</td>
<td>Cisco Media Convergence Server, M-LS-1625-4TA and M-LS-1625-1133</td>
</tr>
<tr>
<td>System Capacity</td>
<td>A single Cisco Emergency Responder server supports 10,000 phones and 30,000 Ethernet switch ports. Additional scalability parameters include 5000 Emergency Response Locations (ERLs) - locations that can be uniquely identified to a Public Safety Answering Point (PSAP) - as well as 500 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.</td>
</tr>
</tbody>
</table>

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

Cisco Emergency Responder

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/er
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 bootloader image and must be upgraded to a signaling firmware image available on Cisco.com before deployment. Cisco ATAs can be configured 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

Cisco ATA Series of Analog Telephone Adaptors

When a Customer Needs These Features

- 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

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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco ATA 186</th>
<th>Cisco ATA 188</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone and network</td>
<td>2 RJ-11 FXS ports</td>
<td>2 RJ-11 FXS ports</td>
</tr>
<tr>
<td>interfaces</td>
<td>1 RJ-45 interface for network connection</td>
<td>1 RJ-45 interface for network connection</td>
</tr>
<tr>
<td></td>
<td>1 RJ-45 “switch port” for connection to PC or another downstream Ethernet port</td>
<td>1 RJ-45 “switch port” for connection to PC or another downstream Ethernet port</td>
</tr>
<tr>
<td>Dimensions (H x W x D)</td>
<td>1.5 x 6.5 x 5.75 in. (3.8 x 16.5 x 14.6 cm)</td>
<td>1.5 x 6.5 x 5.75 in. (3.8 x 16.5 x 14.6 cm)</td>
</tr>
<tr>
<td>Weights</td>
<td>15 oz (425 gm)</td>
<td>15 oz (425 gm)</td>
</tr>
<tr>
<td>Voice-over-IP (VoIP) protocols</td>
<td>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</td>
<td>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</td>
</tr>
</tbody>
</table>

### Selected Part Numbers and Ordering Information

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](http://www.cisco.com/go/ata186)
# VPN and Security Products

## VPN and Security Products at a Glance

<table>
<thead>
<tr>
<th>Product</th>
<th>Features</th>
<th>Page</th>
</tr>
</thead>
</table>
| Cisco PIX Firewall           | Market-leading, purpose-built appliances which provide broad range of integrated security services  
• Robust stateful inspection firewalling with application awareness  
• Highly scalable remote access and site-to-site VPN  
• Intrusion protection with real-time response to network attacks  
• Award-winning stateful failover for enterprise-class resiliency | 5-2  |
| Cisco IOS Firewall           |  
• Tightly integrated with IOS VPN and advanced routing technologies  
• Stateful packet filtering via context-based access control (CBAC)  
• Inline intrusion detection for real-time response to network attacks  
• Dynamic, network-to-network, per-user authentication and authorization via TACACS+ and RADIUS | 5-5  |
| Firewall Blade for Catalyst 6500 | Firewall Blade for Catalyst 6500 is a high performance integrated stateful firewall solution for Catalyst 6500 family switches with performance exceeding 5GB. It is based on proven PIX technology while providing the following benefits to the customers  
• Investment protection  
• Low cost of ownership  
• Ease of use  
• Operational Consistency  
• Scalability  
See the Catalyst 6500 Series Switch in Chapter 2: LAN Switching, page 2-20, for more information | 5-8  |
| Cisco VPN 3000 Family        | Remote access Virtual Private Network platform  
• Has models for all size companies, from small to large enterprise organizations  
• Reduces communications expenditures  
• Enables users to easily add capacity and throughput | 5-6  |
| Cisco IDS Network Sensor     |  
• Network-based, real-time intrusion detection system capable of monitoring an entire enterprise network  
• Distributed intrusion detection system capable of directing and forwarding alarms between local, regional, and headquarters-based monitoring consoles  
• Scalable architecture to allow the deployment of large numbers of sensors in order to provide comprehensive security coverage in large networks with performance requirements from T1 to gigabit environments  
• Cisco IDS Module enables customers to perform both security monitoring and switching functions within the same chassis  
• CTR (Cisco Threat Response) delivers patented adaptive scan techniques to minimize false alarms | 5-8  |
| Cisco Security Agent         |  
• The Cisco Security Agent provides threat protection for desktop and server computing systems by identifying and preventing malicious activity. By acting on threats or attacks before they can occur, Cisco Security Agent removes known and unknown security risks to enterprise networks and applications.  
• The Cisco Security Agent 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  
• Protects against known and unknown attacks on both servers and desktops | 5-10 |
| Cisco 7100 Series            | Large branch and central site VPN router  
• Comprehensive suite of VPN services, including encryption, tunneling, firewall, and bandwidth management  
• Embedded I/O for ease of deployment  
• Service module slot for IPSec and PPTP encryption coprocessing  
• Dedicated Site-to-Site VPN router | 5-11 |
Chapter 5 VPN and Security Products

Cisco PIX Firewall Series

The world-leading Cisco PIX® Firewall Series of purpose-built security appliances provides robust, enterprise-class, integrated network security services, including stateful inspection firewalls, virtual private networking (VPN), intrusion protection, and much more—cost-effective, easy-to-deploy solutions. Ranging from compact, “plug-and-play” desktop firewalls for small and home offices to carrier-class gigabit firewalls for the most demanding enterprise and service-provider environments, Cisco PIX Firewalls 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 10 Mbps of firewall throughput and 3 Mbps of 3DES VPN throughput
- Hardware VPN client (Easy VPN Remote)
- VPN concentrator services (Easy VPN Server) for up to 5 remote users

**PIX 506E**
- Remote Office / Branch Office desktop integrated security appliance
- Up to 20 Mbps of firewall throughput and 16 Mbps of 3DES VPN throughput
- Hardware VPN client (Easy VPN Remote)
- VPN concentrator services (Easy VPN Server) for up to 25 remote users
- OSPF dynamic routing support

---

**Cisco Secure Access Control Server (ACS) for Windows**
- Controls the authentication, authorization, and accounting (AAA) of users and administrators to networking devices and services
- Operates as a centralized Remote Access Dial-In User Service (RADIUS) or Terminal Access Controller Access Control System (TACACS+) server
- Supports LDAP user authentication
- Data replication and backup services
- Flexible user and group policy controls
- Support for Cisco 802.11x Catalyst Switch and Wireless solutions
- Extensible Authentication Protocol (EAP) enhancements to support Protected EAP (PEAP) for wireless LANs
- All administrative access is encrypted with SSL

**Cisco Secure User Registration Tool (URT)**
- Identifies users within the network and creates user registration policy bindings that help support S-IP 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
  - Option to allow multiple users connected to a hub to access a VLAN served by a single switch port

**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). This bundle includes: Management and Monitoring Centers, Cisco IDS Host Sensor and Console, Cisco Secure Policy Manager, VPN Monitor, Resource Manager Essentials, and Cisco View
- See Chapter 9—Cisco IOS Software and Network Management for more information on CiscoWorks VPN/Security Management Solution

**Cisco 806, 1700, 2600, 3600, 7200, 7400 and SOHO 70 Series**
- Wide variety of modular router platforms with options for IOS-based and hardware-enabled VPN 1-1 and security support. See individual product pages and Cisco IOS Firewall Feature Set (page 5-5).
Chapter 5  VPN and Security Products

Key Features

- **Security**—Purpose-built firewall 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 Firewalls)
- **High availability**—Award-winning, active/standby stateful failover model 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 440 Mbps, using specialized co-processors designed for accelerating encryption 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
- **Web-Based PIX Device Manager (PDM)**—For simplified configuration and usage reports
- **Auto Update, SSH, SNMP, TFTP, HTTPS, and telnet for remote management**
- **Support from two 10/100 Ethernet interfaces up to nine Gigabit Ethernet interfaces**

**Sell This Product When a Customer Needs These Features**

**PIX 515E**
- Small-to-Medium Business (SMB) integrated security appliance
- Up to 188 M bps of firewall throughput
- Up to 140 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
- VLAN trunking (802.1q tag-based) and OSPF dynamic routing support
- Active/standby stateful failover support

**PIX 525**
- Enterprise-class integrated security appliance
- Up to 330 M bps of firewall throughput
- Up to 155 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 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 stateful failover support

**PIX 535**
- Carrier class large enterprise and service provider firewall appliance
- Up to 1.7 Gbps of firewall throughput
- Up to 440 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 stateful failover support

1. At 1400-byte packets
## 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

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

### Selected Part Numbers and Ordering Information

**Cisco PIX Bundles**

- PIX-535-UR-BUN: PIX 535 Unrestricted Bundle (Chassis, unrestricted license, two 10/100 ports, VPN Accelerator Card+)
- PIX-535-R-BUN: PIX 535 Restricted Bundle (Chassis, restricted license, two 10/100 ports)
- PIX-535-FO-BUN: PIX 535 Failover Bundle (Chassis, failover license, two 10/100 ports, VPN Accelerator 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-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-506-506E-BUN-K9: PIX 506E 3DES/AES Bundle (Chassis, software, 3DES/AES license, two 10/100 ports)
- PIX-501-50-BUN-K8: PIX 501 50 User DES Bundle (Chassis, software, 50 user DES license, two 10/100 ports)
- PIX-501-50-VPN-K9: PIX 501 50 User DES Bundle (Chassis, software, 50 user DES license, two 10/100 ports)
- PIX-501-50-BUN-K9: PIX 501 50 User DES Bundle (Chassis, software, 50 user DES license, two 10/100 ports)
- PIX-501-50-VPN-K9: PIX 501 50 User DES Bundle (Chassis, software, 50 user DES license, two 10/100 ports)
- PIX-501-VPN-K9: PIX 501 10 User DES Bundle (Chassis, software, 10 user DES license, two 10/100 ports)

**Cisco PIX Interfaces and Cards**

- PIX-1GE-46: Single 66-MHz Gigabit Ethernet interface for PIX 53x (multimode fiber, SC connector)
- PIX-1GE: Single Gigabit Ethernet interface for PIX 52x
- PIX-4FE: Four-port 10/100 Fast Ethernet interface
- PIX-LFE: Single-port 10/100 Fast Ethernet interface
- PIX-VPN-ACCEL: IPSec Hardware VPN Accelerator Card (VAC)
- PIX-VPN-ACCEL-PLUS: PIX VPN Accelerator Card+ (VAC+)

**Cisco PIX VPN Feature Licenses**

- PIX-VPN-3DES: 3DES/AES IPSec VPN software license for PIX 52x/53x
- PIX-515-VPN-3DES: 3DES/AES IPSec VPN software license for PIX 515/515E
- PIX-506-506E-VPN-3DES: 3DES/AES IPSec VPN software license for PIX 506/506E
- PIX-501-VPN-3DES: 3DES/AES IPSec VPN software license for PIX 501
- PIX-VPN-DES: 56-bit DES IPSec VPN software license

**Cisco PIX Firewall 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. Resellers: For latest part number and pricing info, see the Distribution Product Reference Guide at: http://www.cisco.com/dprg (limited country availability).
2. AES encryption available with Cisco PIX Firewall Software version 6.3 and above.

For More Information

See the PIX Firewall Web site: [http://www.cisco.com/go/pix](http://www.cisco.com/go/pix)
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 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 where high performance is not a requirement
- 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 intrusion detection system (IDS) to complement firewall or existing IDS (Cisco Secure IDS)
- Security and access to the network on a per-user basis

Key Features
- Context-based access control (CBAC) provides secure, stateful, application-based filtering, supporting the latest protocols and advanced applications
- Intrusion detection for real-time inline monitoring, interception, and response to network misuse
- Dynamic, per-user authentication/authorization for LAN, WAN, and VPN clients
- Graphical configuration and management via the ConfigMaker Security Wizard and Cisco Secure Policy Manager (CSPM)
- Provides strong perimeter security for a complete Cisco IOS Software-based VPN solution, including IPSec, QoS, and tunneling for a wide range of Cisco routers

Competitive Products

- Lucent (Ascend): SecureAccess Firewall
- Nokia: IP400 Series
- Nortel: BaySecure Firewall-1
- Same competitors as PIX so they are also Checkpoint, Linksys, Nokia, Netscreen, etc.

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco IOS Firewall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported Network Interfaces</td>
<td>All network interfaces on supported platforms</td>
</tr>
<tr>
<td>Supported Platforms</td>
<td>Cisco 1720, 2600/2600XM, 3600, 7100, and 7200 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 and authentication proxy</td>
</tr>
<tr>
<td>Simultaneous Sessions</td>
<td>No maximum; dependent on platform, network connectivity, and traffic</td>
</tr>
</tbody>
</table>

Part Numbers and Ordering Information

For Cisco IOS images containing firewall (FW) and intrusion detection (IDS) 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/csis
Cisco VPN 3000 Family

The Cisco VPN 3000 Concentrator Series—
A family of purpose-built, remote access Virtual Private Network (VPN) platforms that incorporates high availability, high performance and scalability with the most advanced encryption and authentication techniques available today. Customers can greatly reduce costs by leveraging their ISPs’ infrastructure and eliminate costly leased lines. This series supports small offices as well as large organizations with up to 10,000 simultaneous remote users per unit. With load balancing configured, multiple units can be clustered to enable unlimited remote access users. It also supports the widest range of VPN clients including Certicom MovianVPN client, Microsoft 2000 L2TP/IPsec Client, and Microsoft PPTP for Windows 95/98/ME/NT/2000/XP.

The Cisco VPN 3002 Hardware Client—Combines the best capabilities of a software client with the reliability and stability of a dedicated hardware platform, and scales to tens of thousands of users. It sets up connections to a variety of Cisco VPN concentrators, including the VPN 3000 series and PIX firewalls.

When to Sell

Sell This Product When a Customer Needs These Features

VPN 3005 and 3015 Concentrators
• A fixed configuration device 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 remote access sessions
• Encryption processing is performed in software
• VPN 3015 is field-upgradeable to the Cisco VPN 3030 and 3060 models and for redundancy

VPN 3030 and 3060 Concentrators
• VPN 3030 is for medium- to large-sized organizations with bandwidth requirements from full T1/E1 through T3/E3 (50 Mbps max. performance) and up to 1500 simultaneous sessions; field-upgradeable to the Cisco VPN 3060
• VPN 3060 is for large organizations, with high-performance, high-bandwidth requirements from fractional T3 through full T3/E3 or greater (100 Mbps max. performance) and up to 5000 simultaneous remote access sessions
• Both have specialized SEP modules to perform hardware-based acceleration

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 remote access sessions

VPN 3000 Client
• Establishes secure, end-to-end encrypted tunnels to the Cisco VPN 3000 Concentrator and other Cisco Easy VPN compliant devices.

VPN 3002 Hardware Client
• Provided at no charge, installs on PCs and is available for Windows, MAC OS X and Linux/Solaris environments
• Supplies the software client in hardware
• Ideal for mixed operating system environments and where corporation does not own/control remote PC 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
- Netscreen: LAN to LAN environments

### Specifications

#### Cisco VPN 3000 Series Concentrators

<table>
<thead>
<tr>
<th>Feature</th>
<th>VPN 3005</th>
<th>VPN 3015</th>
<th>VPN 3030</th>
<th>VPN 3060</th>
<th>VPN 3080</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simultaneous Users</td>
<td>100</td>
<td>100</td>
<td>1500</td>
<td>5000</td>
<td>10,000</td>
</tr>
<tr>
<td>Encryption Throughput</td>
<td>4 M bps</td>
<td>4 M bps</td>
<td>50 M bps</td>
<td>100 M bps</td>
<td>100 M bps</td>
</tr>
<tr>
<td>Encryption Method</td>
<td>Software</td>
<td>Software</td>
<td>Hardware</td>
<td>Hardware</td>
<td>Hardware</td>
</tr>
<tr>
<td>Encryption (SEP) Module</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Redundant SEP</td>
<td>No</td>
<td>No</td>
<td>Optional</td>
<td>Optional</td>
<td>Yes</td>
</tr>
<tr>
<td>Expansion Slots</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>N/A</td>
</tr>
<tr>
<td>Memory</td>
<td>32 M B</td>
<td>128 M B</td>
<td>128 M B</td>
<td>256 M B</td>
<td>256 M B</td>
</tr>
<tr>
<td>Hardware Configuration</td>
<td>1U, Fixed</td>
<td>2U, Scalable</td>
<td>2U, Scalable</td>
<td>2U, Scalable</td>
<td>2U</td>
</tr>
<tr>
<td>Power Supply</td>
<td>Single</td>
<td>Single, with a dual option</td>
<td>Single, with a dual option</td>
<td>Single, with a dual option</td>
<td>Dual</td>
</tr>
<tr>
<td>Client License</td>
<td>Unlimited</td>
<td>Unlimited</td>
<td>Unlimited</td>
<td>Unlimited</td>
<td>Unlimited</td>
</tr>
<tr>
<td>LAN-to-LAN Connections</td>
<td>100</td>
<td>100</td>
<td>500</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>(internal user database)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>1.75 x 17.5 x 11.5 in.</td>
<td>3.5 x 17.5 x 14.5 in.</td>
<td>3.5 x 17.5 x 14.5 in.</td>
<td>3.5 x 17.5 x 14.5 in.</td>
<td>3.5 x 17.5 x 14.5 in.</td>
</tr>
</tbody>
</table>

#### Cisco VPN 3002 Hardware Client

<table>
<thead>
<tr>
<th>Feature</th>
<th>VPN 3002 Hardware Client</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Processor</td>
<td>Motorola PowerPC processor; Dual flash image architecture</td>
</tr>
<tr>
<td>Network Interfaces</td>
<td>CVPN3002-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</td>
</tr>
<tr>
<td>Physical Dimensions</td>
<td>1.967 x 8.6 x 6.5 in. (5 x 8.6 x 16.51 cm)</td>
</tr>
<tr>
<td>Power Supply</td>
<td>External AC Operation: 100-240V at 50/60 Hz with universal power factor correction; 4 foot cord included and international“digital” power cord selection</td>
</tr>
<tr>
<td>Tunneling Protocol Support</td>
<td>IPSec with IKE key management</td>
</tr>
<tr>
<td>Monitoring &amp; Configuration</td>
<td>Event logging; SNMP MIB-II support; Embedded management interface is accessible via console port or local web browser; SSH/SSL</td>
</tr>
<tr>
<td>Encryption Algorithms, Key Management &amp; Authentication Algorithms</td>
<td>56-bit DES (IPsec); 168-bit Triple DES (IPsec); AES 128 &amp; 256-bit (IPsec)</td>
</tr>
<tr>
<td>Authentication and Accounting Servers</td>
<td>Support for redundant external authentication servers including RADIUS, Microsoft NT Domain authentication, X.509v3 Digital Certs (PKCS7-PKCS10)</td>
</tr>
<tr>
<td>Configuration Modes</td>
<td>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</td>
</tr>
</tbody>
</table>

#### Selected Part Numbers and Ordering Information

##### Cisco VPN 3000 Concentrator
- CVPN3005-E/EFE-BUN
- CVPN3015-E/EFE-K9
- CVPN3030-NR-BUN
- CVPN3030 RED-BUN
- CVPN3060-NR-BUN
- CVPN3060 RED-BUN
- CVPN3080-NR-BUN
- CVPN3080 RED-BUN

##### Cisco VPN 3000 Series Upgrades
- CVPN1530-UPG-RED
- CVPN1560-UPG-NR
- CVPN1560-UPG-RED
- CVPN1580-UPG-RED
- CVPN3030-UPG-RED
- CVPN3060-UPG-NR
- CVPN3080-UPG-NR

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Cisco Intrusion Detection System Network Sensors

Cisco integrated network security solutions enable organizations to protect productivity gains and reduce operating costs. The Cisco Intrusion Protection is designed to efficiently protect your data and information infrastructure. Cisco delivers four critical elements for efficient intrusion protection system which are:

- Accurate threat detection—Cisco Intrusion Detection System Version 4.0 (Cisco IDS 4.0) delivers the first step in providing a secure environment by comprehensively detecting all potential threats.
- Intelligent threat investigation—Cisco Threat Response technology virtually eliminates false alarms, and automatically determines which threats need immediate attention to avoid costly intrusions.
- Ease of management—Browser-based tools simplify the user interaction, while providing powerful analytical tools that allow for a rapid and efficient response to threats.
- Flexible deployment options—A range of high-availability devices provide the flexible backbone for creating the secure and efficient intrusion protection system.

The current Cisco IDS sensing portfolio includes the following sensor appliances: IDS 4210, IDS 4235, IDS 4250, and IDS 4250-XL. Additionally, Cisco IDS delivers network protecting that is integrated into the Catalyst 6500 switch with the Intrusion Detection System Module (IDSM-2).
### When to Sell

**Sell This Product**

**Cisco IDS Network Sensors**

**When a Customer Needs These Features**

- Cisco network IDS appliances are network-based, real-time intrusion detection systems capable of monitoring an entire enterprise network.
- Performance requirements from 45 M bps to 1 Gbps.
- The Cisco IDS Module enables customers to perform both security monitoring and switching functions within the same chassis.
- A robust, 24 hour x 7 day-a-week monitoring and response system with the latest attack detection capabilities.
- A distributed intrusion detection system capable of directing and forwarding alarms between local, regional, and headquarters-based monitoring consoles.
- A scalable architecture to allow the deployment of large numbers of sensors in order to provide comprehensive security coverage in large network environments.
- An intrusion detection system designed to integrate smoothly with existing network management tools and practices.
- Automated false alarm reduction capabilities.
- Integration of full featured IDS protection into the Cisco Catalyst 6500 chassis.

### Key Features

- High-Speed Performance including support for full line rate gigabit environments.
- Easy Installation and Setup; Remote Configuration Capability.
- Comprehensive Attack Database.
- Custom User-Defined Signatures; Automatic Signature Updates.
- Notification actions.
- Ability to Monitor 802.1q (trunked) traffic.
- Secure web-based embedded device management and event monitoring.
- Comprehensive IDS Anti-Evasion Techniques.
- Cisco IOS-like CLI for full featured IDS management capabilities.

### Competitive Products

- Internet Security Systems (ISS): RealSecure
- Symantec: Recourse Manhunt & ManTrap/NetProwler
- Enterasys: Dragon IDS
- Intrusion.com: SecureNet
- Snort: IDS
- Tipping Point

### Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>IDS-4210</th>
<th>IDS-4235</th>
<th>IDS-4250</th>
<th>IDS-4250-XL</th>
<th>IDS M Module (IDSM-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td>45 M bps</td>
<td>200 M bps</td>
<td>500 M bps</td>
<td>1000 M bps</td>
<td>600 M bps</td>
</tr>
<tr>
<td>Processor</td>
<td>566 MHz</td>
<td>1.26 GHz</td>
<td>Dual 2.46 GHz</td>
<td>Dual 1.26 GHz with HW acceleration</td>
<td>Custom Hardware</td>
</tr>
<tr>
<td>RAM</td>
<td>256 MB</td>
<td>1 GB</td>
<td>2 GB</td>
<td>2 GB</td>
<td></td>
</tr>
<tr>
<td>Network Interface Card</td>
<td>Autosensing 10/100 Base-T Ethernet</td>
<td>Autosensing 10/100/1000 Base-T Ethernet</td>
<td>Autosensing 10/100/1000BASE-TX with MTRJ</td>
<td>Dual 1000BASE-SX (PCl) with optional 1000BASE-SX (fiber)</td>
<td></td>
</tr>
<tr>
<td>Command &amp; Control Interface</td>
<td>Autosensing 10/100 Base-T Ethernet</td>
<td>Autosensing 10/100/1000Base-TX</td>
<td>Autosensing 10/100/1000Base-TX</td>
<td>Autosensing 10/100/1000Base-TX</td>
<td>PCl</td>
</tr>
</tbody>
</table>

### Selected Part Numbers and Ordering Information

**Cisco IDS Network Appliance Sensor**

- **IDS-4210-K9**: 4210 Sensor (Chassis, s/w, two 10/100 ports, up to 45M bps).
- **IDS-4235-K9**: Cisco IDS 4235 Sensor (chassis, software, 55H, 10/100/1000BASE-T with RJ-45 connector, up to 200 M bps).
- **IDS-4250-K9**: Cisco IDS 4250 Sensor (chassis, software, 55H, 10/100/1000BASE-T with RJ-45 connector, up to 500 M bps).
- **IDS-4250-XL-K9**: Cisco IDS 4250-XL Sensor (chassis, software, 55H, hardware accelerator with dual 1000BASE-SX and MTRJ connectors).

**Cisco IDS Switch Sensor Options**

Chapter 5  VPN and Security Products

Note  Export Considerations: The Cisco IDS 4210, Cisco IDS 4235, Cisco IDS 4250, Cisco IDS 4250-XL and Cisco IDSM-2 are 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 IDS Web site: http://www.cisco.com/go/ids

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 before it can occur, thereby removing potential known and unknown (“Day Zero”) security risks that threaten enterprise networks and applications. The Cisco Security Agent 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. Customers require robust endpoint security that prevents security attacks from affecting the network and critical applications.

As a key component of the SAFE blueprint for secure e-business, the Cisco Security Agent provides unprecedented endpoint protection that enables businesses to participate in e-commerce securely and take advantage of the Internet economy.

When to Sell

Sell This Product: Cisco Security Agent

When a Customer Needs These Features:
• 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

Key Features
• Provides industry-leading protection for Unix and Windows servers
• Open, extensible architecture offers the capability to define and enforce security according to corporate policy
Chapter 5  VPN and Security Products

Competitive Products
- Internet Security Systems (ISS)
- Symantec: Intruder Alert
- Enterasys: Squire
- Entercept
- NFR (Centrax)

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco Security Server Agent</th>
<th>Cisco Security Desktop Agent</th>
<th>Cisco Security Agent Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platforms</td>
<td>Windows 2000 Server and Advanced Server (up to Service Pack 3)</td>
<td>Windows NT 4.0 Workstation (Service Pack 5 or later)</td>
<td>Microsoft Windows 2000 Server and Advanced Server (up to SP 2)</td>
</tr>
<tr>
<td></td>
<td>Windows NT 4.0 Server and Enterprise Server (Service Pack 5 or later)</td>
<td>Windows 2000 Professional (up to Service Pack 3)</td>
<td>Windows XP Professional (up to Service Pack 1)</td>
</tr>
<tr>
<td></td>
<td>Solaris, ESPARC architecture (64-bit kernel)</td>
<td>Solaris, ESPARC architecture (64-bit kernel)</td>
<td>Solaris, ESPARC architecture (64-bit kernel)</td>
</tr>
</tbody>
</table>

Selected Part Numbers and Ordering Information

<table>
<thead>
<tr>
<th>Cisco Security Agent Options</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CSA-MANAGER-K9</td>
<td>Cisco Security Agent Manager (CD Kit)</td>
<td></td>
</tr>
<tr>
<td>CSA-5RV-K9</td>
<td>Cisco Security Server Agent (Win &amp; Sol), 1 Agent</td>
<td></td>
</tr>
<tr>
<td>CSA-810-5RV-K9</td>
<td>Cisco Security Server Agent (Win &amp; Sol), 10 Agent Bundle</td>
<td></td>
</tr>
<tr>
<td>CSA-825-DTOP-K9</td>
<td>Cisco Security Desktop Agent, 25 Agent Bundle</td>
<td></td>
</tr>
<tr>
<td>CSA-8100-DTOP-K9</td>
<td>Cisco Security Desktop Agent, 100 Agent Bundle</td>
<td></td>
</tr>
</tbody>
</table>

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/securityagent

Cisco 7100 Series

The Cisco 7100 series VPN router is a high-end, integrated VPN solution that melds high-speed, industry-leading routing with a comprehensive suite of advanced site-to-site VPN services. The Cisco 7100 series VPN router integrates key features of VPNs—tunneling, data encryption, security, firewall, advanced bandwidth management, and service-level validation—to deliver self-healing, self-defending, VPN platforms that cost-effectively accommodate remote-office and extranet connectivity using public data networks. The Cisco 7100 series VPN router offers specific hardware configurations optimized for VPN applications and network topologies. Optional WAN and embedded Fast Ethernet interfaces combined with high-performance routing and rich VPN services provide turnkey VPN routing solutions.

When to Sell

<table>
<thead>
<tr>
<th>Sell This Product</th>
<th>When a Customer Needs These Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco 7120</td>
<td>• Entry-level Cisco 7100 Series Router designed for large branch or central site VPN with VPN services throughput of up to 50 Mbps</td>
</tr>
<tr>
<td></td>
<td>• Designed primarily for site-to-site VPN deployments with incidental remote access requirements</td>
</tr>
<tr>
<td>Cisco 7140</td>
<td>• High-end site-to-site VPN platform for central site VPN applications with VPN services throughput up to 140 Mbps</td>
</tr>
<tr>
<td></td>
<td>• Provides superior routing and VPN services performance for central site environments, as well as dual power supplies for increased solution reliability</td>
</tr>
</tbody>
</table>

Cisco 7100 Series

5-11
Key Features

- Comprehensive suite of VPN services—tunneling, data encryption, security, firewall, quality of service, and service level validation—integrated with industry leading routing
- High performance RISC processor delivering high-speed, scalable VPN services and routing throughput and extensive memory for reliable, high-speed VPN services delivery
- Dual autosensing 10/100BASE-T Fast Ethernet ports for connectivity to the corporate LAN; the Cisco 7120 Series also has an integrated 4-port T1/E1 serial WAN interface
- Integrated Services Module (ISM) is included for support up to 2000 simultaneous tunneling sessions with 90 Mbps encryption performance and Windows 95/98/NT4.0 and Windows 2000 compatibility for remote access; an optional Integrated Services Adapter (ISA) may be installed in the Cisco 7140 to provide dual encryption acceleration performance up to 3000 tunnels and 140 Mbps 3DES encryption throughput

Competitive Products
- Check Point: VPN-1 Appliance
- Nortel: Contivity 4500
- Nokia: IP440

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco 7120</th>
<th>Cisco 7140</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embedded Dual 10/100BASE-T</td>
<td>Autosensing, RJ-45</td>
<td>Autosensing, RJ-45</td>
</tr>
<tr>
<td>Fast Ethernet Interfaces</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WAN Physical Interfaces</td>
<td>EIA/TIA-232, EIA/TIA-449, X.21, V.35, EIA-530</td>
<td>None</td>
</tr>
<tr>
<td>WAN/LAN Interface Expansion Slot</td>
<td>1 slot</td>
<td>1 slot</td>
</tr>
<tr>
<td>Supported Network and Services Port Adapters</td>
<td>Gigabit Ethernet 1000BASE-SX and 1000BASE-LX/LH</td>
<td>Same as Cisco 7120</td>
</tr>
<tr>
<td></td>
<td>Fast Ethernet 1000BASE-TX and 1000BASE-FX</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ethernet 10BASE-T and 10BASE-FL</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ATM, Synchronous Serial, HSSI, ISDN BRI, Packet over SONET OC3/STM1, Integrated Services Adapter (ISA)</td>
<td></td>
</tr>
<tr>
<td>Service Module Slot</td>
<td>1 slot</td>
<td>1 slot</td>
</tr>
<tr>
<td>Included Service Modules</td>
<td>Integrated Services Module (ISM)</td>
<td>Integrated Services Module (ISM)</td>
</tr>
<tr>
<td>Console and Auxiliary Ports</td>
<td>1 of each, RJ-45 interface</td>
<td>1 of each, RJ-45 interface</td>
</tr>
<tr>
<td>SDRAM</td>
<td>64 MB packet</td>
<td>64 MB packet</td>
</tr>
<tr>
<td></td>
<td>128 MB system (expandable to 256 MB)</td>
<td>128 MB system (expandable to 256 MB)</td>
</tr>
<tr>
<td>Flash Memory</td>
<td>16 MB</td>
<td>16 MB</td>
</tr>
<tr>
<td>PCMCIA Slots for Flash Memory</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Power Supply</td>
<td>Single AC</td>
<td>Dual AC</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>35 in. x 17.5 in. x 18.25 in.</td>
<td>35 in. x 17.5 in. x 18.25 in.</td>
</tr>
</tbody>
</table>
Cisco 7100 Series

Chapter 5  VPN and Security Products

Cisco IOS Software and Memory Requirements

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

<table>
<thead>
<tr>
<th>Distribution</th>
<th>Part Number</th>
<th>Feature Pack Description</th>
<th>IOS Image Release</th>
<th>Flash Memory Required</th>
<th>DRAM Memory Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD71-CL-12.1.6E=</td>
<td>IP IPSec DES</td>
<td>12.1(6)E</td>
<td>16MB</td>
<td>64MB</td>
<td></td>
</tr>
<tr>
<td>CD71-CK2-12.1.6E=</td>
<td>IP IPSec 3DES</td>
<td>12.1(6)E</td>
<td>16MB</td>
<td>64MB</td>
<td></td>
</tr>
<tr>
<td>CD71-CHK2-12.1.6E=</td>
<td>IP/FW/IDS IPSec 3DES</td>
<td>12.1(6)E</td>
<td>16MB</td>
<td>64MB</td>
<td></td>
</tr>
<tr>
<td>CD71-AK2-12.1.6=</td>
<td>Enterprise IPSec DES</td>
<td>12.1(6)E</td>
<td>16MB</td>
<td>64MB</td>
<td></td>
</tr>
<tr>
<td>CD71-AHK2-12.1.6E=</td>
<td>Enterprise/FW/IDS IPSec 3DES</td>
<td>12.1(6)E</td>
<td>16MB</td>
<td>64MB</td>
<td></td>
</tr>
</tbody>
</table>

Selected Part Numbers and Ordering Information

Cisco 7100 Series Bundles—7120

CISCO7120-4T1/VPN 7120-4T1 VPN Bundle, ISM, 2xFE, AC PS, IPSEC DES
C7120-4T1VPN/K9 7120-4T1 VPN Bundle, ISM, 2xFE, AC PS, IPSEC DES

Cisco 7100 Series Bundles—7140

CISCO7140-2FE/VPN 7140-2FE VPN Bundle, ISM, 2xFE, 2xAC PS, IPSEC DES
C7140-2FE/2VPN/K9 7140-2FE VPN Bundle, ISM & ISA, 2xFE, 2xAC PS, IPSEC DES
C7140-2FE/VPN/K9 7140-2FE VPN Bundle, ISM & ISA, 2xFE, 2xAC PS, IPSEC DES
C7140-2FE/VPN/K9 7140-2FE VPN Bundle, ISM & ISA, 2xFE, 2xAC PS, IPSEC DES
C7140-2FE/VPN/K9 7140-2FE VPN Bundle, ISM & ISA, 2xFE, 2xAC PS, IPSEC DES

Cisco 7100 Port Adapters

PA-FE-TX 1-port Fast Ethernet 100BaseTx Port Adapter
PA-FE-FX 1-port Fast Ethernet 100BaseFx Port Adapter
PA-2FE-TX 2-port Fast Ethernet 100BaseTx Port Adapter
PA-2FE-FX 2-port Fast Ethernet 100BaseFx Port Adapter
PA-2FEISL-TX 2-port Token Ring ISL 100BaseTx Port Adapter
PA-2FEISL-FX 2-port Token Ring ISL 100BaseFx Port Adapter
PA-4E 4-port 10BaseT Port Adapter
PA-8E 8-port 10BaseT Port Adapter
PA-SEFL 5-port Ethernet 10BaseFL Port Adapter
PA-4T+ 4-port Serial Port Adapter, Enhanced
PA-BT-V35 8-port Serial, V.35 Port Adapter
PA-BT-232 8-port Serial, 232 Port Adapter
PA-BT-X21 8-port Serial, X.21 Port Adapter
PA-4R-DTR 4-port Dedicated Token Ring, 4/10M bps, HDX/FDX Port Adapter
PA-GE Gigabit Ethernet Port Adapter
PA-H 1-port HSSI Port Adapter
PA-2H 2-port HSSI Port Adapter
PA-A3-T3 1-port ATM Enhanced DS3 Port Adapter
PA-A3-E3 1-port ATM Enhanced E3 Port Adapter
PA-A3-OC3M 1-port ATM Enhanced OC3c/STM 1 Multimode Port Adapter
PA-A3-OC3ML 1-port ATM Enhanced OC3c/STM 1 Single mode (LR) Port Adapter
PA-A3-OC3H 4-port E1 G.703 Serial Port Adapter (15600 bps/Unbalanced)
PA-A3G-OC3H 4-port E1 G.703 Serial Port Adapter (12000 bps/Balanced)
PA-E3 1-port E3 Serial Port Adapter with E3 DSU
PA-2E3 2-port E3 Serial Port Adapter with E3 DSUs
PA-T3 1-port T3 Serial Port Adapter with T3 DSUs
PA-2T3 2-port T3 Serial Port Adapter with T3 DSUs
PA-MC-2T1 2-port multichannel T1 port adapter with integrated CSU/DSUs
PA-MC-CE1-1/20 2-port multichannel E1 port adapter with G.103 2.000nm interf
PA-MC-CT1 4-port multichannel T1 port adapter with integrated CSU/DSUs
PA-MC-E1-1/20 8-port multichannel T1 port adapter with integrated CSU/DSUs
PA-MC-BE1-1/20 8-port multichannel E1 port adapter with G.103 1.340nm interf
PA-POS-OC3M 1-port Packet/Sonet 3c/STM 1 Multimode Port Adapter
PA-POS-OC3MH 1-port Packet/Sonet 3c/STM 1 Single mode (LR) Port Adapter
PA-POS-OC3ML 1-port Packet/Sonet 3c/STM 1 Single mode (LR) Port Adapter
SM-ISM Integrated Services Module for IPsec & MPPE encryption
SA-ISA Integrated Services Adapter for IPsec & MPPE encryption
Cisco Secure Access Control Server for Windows

Cisco Secure ACS is a highly scalable, high-performance access control server that operates as a centralized Remote Access Dial-In User Service (RADIUS) or Terminal Access Controller Access Control System (TACACS+) server system. Cisco Secure ACS controls the authentication, authorization, and accounting (AAA) of users and administrators accessing corporate resources through the network. Cisco Secure ACS greatly reduces the administrative and management burden involved in scaling user and network administrative access to your network. Cisco Secure ACS centralizes the administration of user access controls globally to ensure enforcement of assigned policies.

ACS 3.1 provides support for the latest security architecture for Wireless authentication. It also includes SSL server authentication and encryption for administrative login.

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

• PEAP support—Provides a new, secure client-server authentication method for wireless networks; Provides new support for one-time token authentication, password change/aging and powerful extensibility of end-user databases such as LDAP, NDS, and ODBC.
• SSL support for administrative access—Administrative access via the Web GUI can be secured with SSL, both certificate-based and encrypted tunnel support
• CHPASS improvements—Allows privileged users control over whether network administrators can change passwords during TACACS+ AAA client-hosted Telnet sessions
• Improved IP pool addressing mechanism—Includes a new, efficient algorithm for allocating IP addresses
• Device search mechanism—Allows users to search for a configured AAA device based on the device name, IP address, type (RADIUS or TACACS+), or device group
• Improved PKI support—Provides a more secure PKI authentication scheme by verifying the user’s certificate authority stored in the remote LDAP directory against the one provided by the client

For More Information
See the Cisco 7100 series Web site: [http://www.cisco.com/go/7100](http://www.cisco.com/go/7100)
Chapter 5  VPN and Security Products

• EAP proxy enhancements—Extends EAP (LEAP, PEAP, or EAP-transport layer security (TLS)) proxy to other RADIUS or external databases using standard RADIUS proxy
• Integration with Cisco’s security management software applications—Provides a consolidated administrative TACACS+ control framework for many Cisco security management tools such as CiscoWorks VPN/Security Management Solution (VMS)

Competitive Products
• Funk: Steel-Belted RADIUS
• Lucent/Avaya: Security Management Server (LSM S)
• Nortel: Preside RADIUS Server (OEM of Funk product)

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco Secure Access Control Server (ACS) for Windows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform</td>
<td>Windows 2000 Server must meet the following minimum hardware requirements: Pentium processor, 330 MHz or faster; minimum resolution of 256 colors at 800 x 600 lines</td>
</tr>
<tr>
<td>RAM</td>
<td>256 MB required; more if you are running your database on the same machine</td>
</tr>
<tr>
<td>Disk Drive</td>
<td>250 MB of disk space; more if you are running your database on the same machine</td>
</tr>
<tr>
<td>Software Requirements</td>
<td>Cisco Secure ACS server uses an English-language version of Windows 2000 Server. For specific types of service packs supported, refer to online documentation. The Windows server that runs Cisco Secure ACS must have a compatible browser installed. Cisco Secure ACS was tested with English-language versions of the following browsers on Microsoft Windows operating systems: Microsoft Internet Explorer 5.5 and 6.0. Netscape Communicator 6.2</td>
</tr>
</tbody>
</table>

Platform Requirements

Cisco Secure ACS Server uses an English-language version of Windows 2000 Server. For specific types of service packs supported, refer to online documentation. The Windows server that runs Cisco Secure ACS must have a compatible browser installed. Cisco Secure ACS was tested with English-language versions of the following browsers on Microsoft Windows operating systems: Microsoft Internet Explorer 5.5 and 6.0. Netscape Communicator 6.2

1. Beginning with Cisco Secure ACS Version 3.1, Cisco Secure ACS on a Windows NT 4.0 server is no longer supported. For information about upgrading the operating system of a server running Cisco Secure ACS, see the Installation Guide for Cisco Secure ACS for Windows Server, Version 3.1

Selected Part Numbers and Ordering Information

CSACS-3.1-WIN-K9 Cisco Secure ACS 3.1 for Windows
CSACS-3.1-WINU-K9 Upgrade to CSACS 3.1 for Windows from ACS versions 1.x, 2.x, 3.0 and Cisco Secure ACS for Unix versions 2.x

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/accs

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
Cisco Secure User Registration Tool (URT)

When a Customer Needs These Features
- 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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco Secure User Registration Tool (URT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server Requirements</td>
<td>Windows 2000 (Server, professional), and Windows XP Professional M in H/W (Pentium III, 128MB DRAM, 65 MB of disk space)</td>
</tr>
<tr>
<td>Browser for Web Login</td>
<td>Netscape version 4.79 and 6.2/IE version 5.5 (SP2) or 6.0</td>
</tr>
<tr>
<td>Supported Cisco Products (latest tested version)</td>
<td>1900 series (1912, 1924), v9.00.05; C2800 series (2822, 2828), v9.00.05; C2900XL series (2908XL, 2916XL, 2912XL), v9.00.05; C3500XL series (3508XL, 3512XL, 3524XL, 3548XL, 3550XL), v12.0(20)GW4; C2950 series, v12.0(18)GW4; C2960 series, v12.0(18)GW4; C2960L series, v12.0(18)GW4; C2960LX series, v12.0; C2970 series, v12.1.8; C3650 series, v12.0(18)GW4; C6000 series, v7.1(3a); C6000 series (6506, 6509), v7.1(3)</td>
</tr>
</tbody>
</table>

Selected Part Numbers and Ordering Information

1. Cisco Secure User Registration Tool (URT)

URT-2.5-K9: Starter Kit: Includes one (1) User Registration Tool 2.5 Software license, and one (1) Cisco 1101 VLAN Policy Server (VPS) appliance
URT-2.5-UP: Software only; upgrades customers from URT 2.X to 2.5; includes upgrade for both URT Admin Server and Cisco 1100 VPS appliance
URT-1101-HW-K9: Hardware Only; Cisco 1100 VPS appliance; additional appliance needed for backup, use in distributed deployments, or deployments requiring Web logon capabilities

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

### Content Networking Products at a Glance

<table>
<thead>
<tr>
<th>Product</th>
<th>Features</th>
<th>Page</th>
</tr>
</thead>
</table>
| **Cisco Content Engine 500 Series**               | Content services edge delivery platform for Enterprise networks  
• 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. | 6-2  |
| **Cisco Content Engine 7300 Series**              | Content services platform for Enterprise data center and Service Provider networks  
• 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 | 6-2  |
| **Content Engine Network Modules**                | Content services edge delivery network module for 2600, 3600, 3700 branch routers  
• 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 | 6-2  |
| **Cisco 11500 Series Content Services Switches**  | Next-generation intelligent platform for Web site and e-commerce optimization  
• Provides an intelligent, distributed architecture to scale for today's e-business infrastructure  
• 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 | 6-4  |
| **Cisco LocalDirector**                           | Integrated hardware and software solution for load balancing across servers  
• Allows many servers to appear as one server for high availability and easy scalability  
• Secure real-time embedded operating system | 6-6  |
| **Cisco Content Distribution Manager 4600 Series**| Content networking policy and management device  
• Central control over acquisition and distribution of content, including live and video on demand video, over IP networks  
• Intuitive web-based GUI provides integrated, easy-to-use 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 | 6-7  |
| **Cisco Content Router 4430**                     | Integrated global load balancing solution for content delivery networks  
• Solves distributed server site selection problems  
• Uses HTTP (CR-4430) to redirect a client to the best site on the Internet based on network delay  
• Transparently redirects end user requests to the end user and works with any IP application  
• Extremely fast site-selection algorithm is optimized for high performance Web-style transactions | 6-9  |
| **Content Switching Module (CSM) for the Catalyst 6500 Series Switches** | Line card for Catalyst 6500  
• Balances client traffic across multiple servers within server farms  
• URL and Cookie-based load balancing  
• High-performance—200,000 new Layer 4 TCP connection setups per second | 6-11 |
| **Cisco SSL Module for Catalyst 6500**            | Line card for Catalyst 6500  
• Scalable performance  
• Stickyness | 6-11 |
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 optimize any size 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. For Service Providers, the Cisco ACN System represents a highly profitable, new revenue opportunity by enhancing the customer/user Web experience and significantly accelerating the delivery of rich Web applications, content and streaming media.

Cisco Content Engines

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, the Cisco Content Engine (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.
Chapter 6  Content Networking Products

When to Sell

Sell This Product  When a Customer Needs These Features

Content Engine 7325  • Ultra high-end content delivery capabilities for advanced applications such as streaming media, e-learning, and corporate communications

Content Engine 7305  • High-end content delivery capabilities for advanced applications such as streaming media, e-learning, and corporate communications

Content Engine 565  • M10 range branch office and datacenter cache ideal for transparent caching, URL filtering, and edge content delivery

Content Engine 510  • 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—Provides accelerated content delivery, 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 N1000 Series and Blue Coat Systems Director

• Volera: Excelerator, Media Excelerator, Secure Excelerator

• Network Appliance: NetCache C1200/2100/6100 Series Appliances and Content Director

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco Content Engine 7325</th>
<th>Cisco Content Engine 7305</th>
<th>Cisco Content Engine 565</th>
<th>Cisco Content Engine 510</th>
<th>Cisco CE Network Module</th>
<th>Cisco SA-7 and SA-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported Interfaces</td>
<td>10/100/1000BASE-TX</td>
<td>10/100/1000BASE-TX</td>
<td>10/100/1000BASE-TX</td>
<td>10/100/1000BASE-TX</td>
<td>10/100/1000BASE-TX</td>
<td>10/100/1000BASE-TX</td>
</tr>
<tr>
<td>SDRAM</td>
<td>4 GB</td>
<td>2 GB</td>
<td>1 GB</td>
<td>512 MB</td>
<td>Up to 512 MB</td>
<td>Up to 512 MB</td>
</tr>
<tr>
<td>Max Storage</td>
<td>936 GB</td>
<td>936 GB</td>
<td>396 GB</td>
<td>80 GB</td>
<td>396 GB</td>
<td>252 or 540 GB</td>
</tr>
<tr>
<td>Maximum Internal Storage</td>
<td>Ultra2 SCSI</td>
<td>Ultra2 SCSI</td>
<td>Ultra2 SCSI</td>
<td>IDE</td>
<td>Ultra2 SCSI</td>
<td>Ultra2 SCSI</td>
</tr>
<tr>
<td>Flash Memory</td>
<td>228 M B</td>
<td>228 M B</td>
<td>228 M B</td>
<td>228 M B</td>
<td>16 M B</td>
<td>16 M B</td>
</tr>
<tr>
<td>Storage Array Support</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Rack Units</td>
<td>2 RU</td>
<td>2 RU</td>
<td>2 RU</td>
<td>1 RU</td>
<td>N/A</td>
<td>3 RU</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>2.98 x 17.46 x 27.48 in.</td>
<td>2.98 x 17.46 x 27.48 in.</td>
<td>1.72 x 17.3 x 18.75 in.</td>
<td>1.72 x 17.3 x 18.75 in.</td>
<td>Ultra2 2RU in 2600/3600/3700 chassis</td>
<td>5.5 x 17.5 x 20.4 in.</td>
</tr>
<tr>
<td>Weight</td>
<td>42 lb.</td>
<td>42 lb.</td>
<td>28 lb.</td>
<td>28 lb.</td>
<td>15 lb.</td>
<td>76 lb.</td>
</tr>
</tbody>
</table>
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

For More Information

See the Cisco Content Engine Web sites: [http://www.cisco.com/go/ce500](http://www.cisco.com/go/ce500) and [http://www.cisco.com/go/ce7300](http://www.cisco.com/go/ce7300)
Key Features

- Introduces an intelligent, distributed architecture to meet the real-world scaling requirements of today’s e-business infrastructure
- Improves site availability and transaction integrity by introducing 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
- 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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco CSS 11501</th>
<th>Cisco CSS 11503</th>
<th>Cisco CSS 11506</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modular Slots</td>
<td>N/A</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Base Configuration</td>
<td>Switch Control with 8 10/100 Ethernet, 1 GBIC port</td>
<td>Switch Control Module with 2 Gigabit Ethernet (GBIC) ports</td>
<td>Switch Control Module with 2 Gigabit Ethernet (GBIC) ports</td>
</tr>
<tr>
<td>Max GB Ethernet Ports</td>
<td>1</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Max 10/100 Ethernet ports</td>
<td>8</td>
<td>25</td>
<td>80</td>
</tr>
<tr>
<td>2-port GB Ethernet I/O Module</td>
<td>2</td>
<td>Max: 2</td>
<td>Max: 5</td>
</tr>
<tr>
<td>4-port GB Ethernet I/O Module</td>
<td>Max: 2</td>
<td>Max: 5</td>
<td>Max: 5</td>
</tr>
<tr>
<td>SSL Module</td>
<td>Max: 2</td>
<td>Max: 5</td>
<td>Max: 5</td>
</tr>
<tr>
<td>Session Accelerator modules</td>
<td>Max: 2</td>
<td>Max: 5</td>
<td>Max: 5</td>
</tr>
<tr>
<td>Redundancy features</td>
<td>Active-active Layer 5 Adaptive session redundancy Virtual IP Address (VIP) redundancy</td>
<td>Active-active Layer 5 Adaptive Session Redundancy VIP redundancy</td>
<td>Active-active Layer 5 Adaptive Session Redundancy VIP redundancy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>1 7/8 in. (1 rack unit)</td>
<td>3 5/8 in. (2 rack units)</td>
<td>8 7/8 in. (5 rack units)</td>
</tr>
<tr>
<td>Bandwidth</td>
<td>Aggregate 6 Gbps</td>
<td>Aggregate 20 Gbps</td>
<td>Aggregate 40 Gbps</td>
</tr>
<tr>
<td>Storage</td>
<td>512 M B hard disk or 256 M B Flash</td>
<td>512 M B hard disk or 256 M B Flash</td>
<td>512 M B hard disk or 256 M B Flash</td>
</tr>
<tr>
<td>Power</td>
<td>Integrated AC supply</td>
<td>Integrated AC or DC</td>
<td>Up to 3 AC or 3 DC</td>
</tr>
</tbody>
</table>

Selected Part Numbers and Ordering Information

Cisco CSS 11500 Series Content Services Switches

- CSS11500-2AC Cisco CSS 11500 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)
- CSS11500-2DC Cisco CSS 11500 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)
- CSS11503-AC Cisco CSS 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 CSS 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)
- 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-SAEM Cisco CSS 11500 Session Accelerator Module
- CSS5-SSL Cisco CSS 11500 SSL Module
- CSS11501 Cisco CSS 11501 Content Services Switch with 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).
Cisco LocalDirector

The Cisco Local Director Series offers a high-availability, integrated hardware and software solution that intelligently balances the load of user traffic across multiple TCP/IP application servers. Cisco Local Director tracks network sessions and server load conditions in real time, directing each session to the most appropriate server. All physical servers appear as one virtual server, requiring only a single IP address and a single URL for an entire server farm.

A key component of a content delivery network, Cisco Local Director accelerates content delivery by routing client requests to the best Web server at the Web site of origin. Cisco Local Director supports critical content routing protocols such as Dynamic Feedback Protocol (DFP) and the Boomerang Control Protocol (BCP), which ensure seamless content delivery network integration and reduced deployment costs. Layer 4-7 content load balancing guarantees that the correct client is routed to an optimized content location. The accelerated server load balancing (ASLB) feature works with the Cisco Catalyst 6000 and 6500 Series switches to accelerate scaling of TCP sessions and help to protect against Flash crowds—sudden traffic surges that can overwhelm a web site.

When to Sell

Sell This Product | When a Customer Needs These Features
--- | ---
Cisco LocalDirector | • Load balancing across multiple TCP/IP application servers
 | • High availability Internet services such as e-commerce, Web content, and e-mail
 | • High availability Intranet services for employees, customers, and suppliers

Key Features

• HTTP redirect sticky enables client-to-server persistence, regardless of SSL and shopping-cart configurations, to improve site availability
• Hot-standby and stateful failover mechanisms ensures high availability by eliminating all points of failure for the data center
• Transparent support for all common TCP/IP Internet services, including User Datagram Protocol (UDP), accommodates a wide range of applications and communications needs (Web, File Transfer Protocol [FTP], Telnet, Domain Name System [DNS], and Simple Mail Transfer Protocol [SMTP]) without special software configuration
• SSL and cookie sticky ensures completion of complex transactions in proxy server environments
• Client-assigned load balancing provides QoS mechanism by allowing traffic to be directed to servers based on source IP address
• High-performance hardware supports six Fast Ethernet (Cisco Local Director 417) or two Fast Ethernet plus two Gigabit Ethernet (Cisco Local Director 417G) interfaces
• Network Address Translation (NAT) allows unregistered IP addresses on servers without router assistance
Chapter 6  Content Networking Products

• Simple setup in 10 commands offers simple setup for typical configurations, with little disruption to existing network configuration and no changes to network addresses
• Integrated security capability effectively protects server farms from unauthorized access by filtering based on client IP address and service

Competitive Products

• F5 Labs: Big IP
• Foundry Networks: ServerIron Switch
• Nortel Networks/Alteon: Ace Director

Cisco Content Distribution Manager 4600 Series

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. Deployed in an Enterprise or Service Provider Internet or extranet environment, the Cisco CDM and CEs provide transparent on-demand rich media streaming and static file delivery to standard PCs.

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.

Selected Part Numbers and Ordering Information

<table>
<thead>
<tr>
<th>Feature</th>
<th>LocalDirector 417</th>
<th>LocalDirector 417G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported Interfaces</td>
<td>Six 10/100BASE-TX</td>
<td>Two 10/100BASE-TX plus two 1000BASE-SX interfaces</td>
</tr>
<tr>
<td>Other Interfaces</td>
<td>RJ-45 console interface, DB-15 redundant failover interface</td>
<td>RJ-45 console interface, DB-15 redundant failover interface</td>
</tr>
<tr>
<td>RAM</td>
<td>512 MB</td>
<td>512 MB</td>
</tr>
<tr>
<td>Flash</td>
<td>16 MB</td>
<td>16 MB</td>
</tr>
<tr>
<td>Performance</td>
<td>8000 virtual and real IP addresses, 700,000 simultaneous TCP connections, 80 M bps throughput</td>
<td>64,000 virtual and real IP addresses, 1,000,000 simultaneous TCP connections, 400 M bps throughput</td>
</tr>
</tbody>
</table>

Dimensions (HxWxD) 1.72 x 17.5 x 14.13 in 1.72 x 17.5 x 14.13 in

For More Information

See the LocalDirector Web site: http://www.cisco.com/go/ld
When to Sell

Sell This Product When a Customer Needs These Features
CDM 4630 • Low-cost early deployment, or small enterprise network trials, proof of concept, and pilot programs
CDM 4650 • Medium and large enterprise networks, supports up to 1000 Cisco Content Engines
CDM 4670 • 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

Competitive Products
• Cacheflow: Client and Server Accelerators
• Inktomi: Traffic Server
• Network Appliance: ContentDirector

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Content Distribution Manager 4630</th>
<th>Content Distribution Manager 4650</th>
<th>Content Distribution Manager 4670</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sampling of Rich Media File Formats</td>
<td>MPEG, RealVideo, Windows Media, QuickTime, HML, GIF, JPEG</td>
<td>Same as CDM 4630</td>
<td>N/A — file formats handled by the CEs</td>
</tr>
<tr>
<td>Recommended Network Size</td>
<td>Less than 100 CEs</td>
<td>Less than 1000 CEs</td>
<td>Less than 10,000 CEs</td>
</tr>
<tr>
<td>Processor Speed</td>
<td>600 MHz PIII</td>
<td>2x866 Xeon</td>
<td>2x866 Xeon</td>
</tr>
<tr>
<td>RAM</td>
<td>1 GB</td>
<td>1 GB</td>
<td>1 GB</td>
</tr>
<tr>
<td>Internal Storage</td>
<td>One 30 GB, 10K RPM, Ultra2 SCSI disk drive</td>
<td>140 GB RAID 5</td>
<td>360 GB</td>
</tr>
<tr>
<td>Rack Units</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>12.25 x 17.5 x 14.1 in.</td>
<td>12.25 x 17.5 x 28 in.</td>
<td>12.25 x 17.5 x 28 in.</td>
</tr>
</tbody>
</table>

1. Minimum storage required for DM service provider configurations

Cisco Content Distribution Manager 4600 Series
Cisco Content Router 4430

The Cisco Content Router 4430 (CR 4430) 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 4430 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.

When to Sell

Sell This Product When a Customer Needs These Features

- Cisco Content Router 4430
  - 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 CR 4430s 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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco Content Router CR4430</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Interface Card</td>
<td>10/100BASE-TX</td>
</tr>
<tr>
<td>Processor</td>
<td>600-MHz PIII</td>
</tr>
<tr>
<td>RAM</td>
<td>1 GB</td>
</tr>
<tr>
<td>Internal Storage</td>
<td>18 GB</td>
</tr>
<tr>
<td>Rack Units</td>
<td>1</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>1.72 x 17.50 x 14.13 in.</td>
</tr>
<tr>
<td>Weight</td>
<td>12.5 lbs.</td>
</tr>
</tbody>
</table>

Cisco Content Router 4430

Chapter 6 Content Networking Products

Selected Part Number and Ordering Information

Cisco Content Distribution Manager 4600 Series Hardware

CDM-4630 Cisco Content Distribution Manager 4630
CDM-4650 Cisco Content Distribution Manager 4650
CDM-4670 Cisco Content Distribution Manager 4670

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 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

Key Features

- Market-leading performance—Establishes up to 200,000 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
- Uses the same Cisco IOS Command Line Interface (CLI) that is used to configure the Catalyst 6500 Switch

Competitive Products

- Alteon/Nortel: ACEdirector and 700 Series
- Foundry Networks: ServerIron
- Radware: Web Server Director (WSD)
- Resonate: Central Dispatch and Global Dispatch
- F5 Networks: Big/IP and LAN switch Partners
- Cisco Content Switching Module (CSM)

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco Content Switching Module (CSM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configuration Limits</td>
<td>256 total VLANs (client and server); 4000 virtual servers; 4000 server farms; 20,000 real servers; 4000 probes; 16,000 access control list (ACL) items</td>
</tr>
<tr>
<td>Connections</td>
<td>1,000,000 concurrent TCP connections</td>
</tr>
<tr>
<td></td>
<td>200,000 connection setups per second—Layer 4</td>
</tr>
<tr>
<td>Throughput</td>
<td>4 gigabits per second total combined client-to-server and server-to-client throughput</td>
</tr>
<tr>
<td>Catalyst Switch Platform</td>
<td>Cisco IOS software only—Catalyst Operating System is not supported</td>
</tr>
<tr>
<td>Requirements</td>
<td>Functions as a bus enabled line card—not fabric enabled</td>
</tr>
<tr>
<td></td>
<td>Multilayer switch feature card—M SFC or M SFC2</td>
</tr>
</tbody>
</table>
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

SSL Module for Catalyst 6500

When a Customer Needs These Features

• 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 340
• Nortel/Alteon iSD 410 SSL Accelerator

Specifications

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 or 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

Cisco SSL Module for Catalyst 6500

WS-X6066-SLB-APC  Catalyst 6500 Content Switching Module

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

<table>
<thead>
<tr>
<th>Cisco SCA 11000 SCA2 SCA</th>
<th>SCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Ports</td>
<td>Two 10/100BaseTX Ports, Two 10/100Base TX Ports, Console Port: DB9 Serial Port, Failover Port: DB9 Serial Port</td>
</tr>
<tr>
<td>Port Description</td>
<td>Two 10/100BaseTX Ports, Two 10/100Base TX Ports, Console Port: DB9 Serial Port, Failover Port: DB9 Serial Port</td>
</tr>
<tr>
<td>Data Transfer Rates</td>
<td>Ethernet: 10 Mbps (half duplex), 20 Mbps (full duplex); Fast Ethernet: 100 Mbps (half duplex), 200 Mbps (full duplex)</td>
</tr>
<tr>
<td>Configuration Software OS Support</td>
<td>Windows NT 4.0, Red Hat Linux 5.0, 6.0, 6.1, 6.2</td>
</tr>
<tr>
<td>Memory</td>
<td>64 MB RAM; 16 MB Flash ROM</td>
</tr>
<tr>
<td>Dimensions</td>
<td>8.875 x 1.75 x 19 in.</td>
</tr>
<tr>
<td>Concurrent Sessions</td>
<td>1,000</td>
</tr>
</tbody>
</table>

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

Chapter 6  Content Networking Products

Cisco CTE-1400 Series Content Transformation Engine

The Cisco CTE 1400 Series Content Transformation Engine provides customers with a high-performance, appliance-based solution that delivers real business applications and Internet content to a variety of devices including Wireless Application Protocol (WAP) phones, personal digital assistants (PDAs), Blackberry pagers, Cisco IP Phones and other non-PC devices. Examples of applications that can be transformed include e-mail, CRM/SFA applications, intranets, maps, directions, and corporate directories as well as many vertical applications in healthcare, retail, finance, hospitality and education. The Content Transformation Engine (CTE) is a 1 Rack Unit appliance optimized to perform the task of converting HTML and XML applications to a format appropriate for devices with unique display requirements. In addition, the solution recognizes specific Web-enabled devices such as IP Phones, PDAs and mobile phones, and customizes the delivery of information to give users the right form of data, to suit their devices characteristics, capability as well as the usage model.

When to Sell

When a Customer Needs These Features

<table>
<thead>
<tr>
<th>Sell This Product</th>
<th>Cisco CTE-1400 Series Content Transformation Engine</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Quickly and easily transform applications to extend them to a variety of new devices.</td>
<td></td>
</tr>
<tr>
<td>• Low total cost of ownership (TCO)</td>
<td></td>
</tr>
<tr>
<td>• Immediate results for a rapid return on investment</td>
<td></td>
</tr>
<tr>
<td>• Self-contained appliance optimized for transformation</td>
<td></td>
</tr>
</tbody>
</table>

Key Features

• Self-contained appliance for content transformation; includes DesignStudio for defining transformation rules
• Seamlessly transforms content as it moves from server to the target device, leaving the server and underlying data unchanged; Reformats data into all major Markup Languages
• Supports Cisco’s AVVID architecture, including transformation for Cisco IP telephony
• Low total cost of ownership

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco CTE-1400 Series Content Transformation Engine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rack Units</td>
<td>1</td>
</tr>
<tr>
<td>Dimensions (HxWxD)</td>
<td>1.70 x 16.7 x 22in.</td>
</tr>
<tr>
<td>Weight</td>
<td>23 lbs</td>
</tr>
</tbody>
</table>

Selected Part Numbers and Ordering Information

<table>
<thead>
<tr>
<th>Cisco CTE 1400 Series Content Transformation Engine</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTE-1450-K9 = Content Transformation Engine Hardware</td>
</tr>
<tr>
<td>CTE-WAP = WAP module for CTE 1400 Series</td>
</tr>
<tr>
<td>CTE-PALM = Palm module for CTE 1400 Series</td>
</tr>
<tr>
<td>CTE-RIM = RIM Blackberry module for CTE 1400 Series</td>
</tr>
<tr>
<td>CTE-HTML = HTML module for CTE 1400 Series</td>
</tr>
</tbody>
</table>

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 CTE-1400 Series Web site at http://www.cisco.com/go/cte
Cisco DistributedDirector

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

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
- F5 Labs: 3DNS
- Foundry Networks: ServerIron Switch with Internet IronWare
- Resonate, Inc.: Global Dispatch
- RND Networks, Inc.: Web Server Director - Network Proximity

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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco GSS 4480</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Ports</td>
<td>Two 10/100Base T Ports</td>
</tr>
<tr>
<td>Port Description</td>
<td>Network Ports: Two 10/100Base T; Console Port</td>
</tr>
<tr>
<td>DNS requests per second</td>
<td>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)</td>
</tr>
<tr>
<td>Configuration Software OS Support</td>
<td>Windows NT 4.0, Red Hat Linux 5.0, 6.0, 6.1, 6.2</td>
</tr>
<tr>
<td>Network management</td>
<td>Console port-CLI Access to system via telnet; Secure copy (SCP) or FTP; GUI-Secure HTTP (HTTPS) for Internet Explorer and Netscape Navigator</td>
</tr>
<tr>
<td>Storage</td>
<td>One 36-GB hard drive</td>
</tr>
<tr>
<td>Physical Dimensions</td>
<td>One-rack unit size chassis; Network management serial port1 GB of RAM; 600-MHz PIII CPU</td>
</tr>
</tbody>
</table>

Selected Part Numbers and Ordering Information

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
Broadband and Dial Access Products

Remote Dial Access—Data and Voice (VoIP)

<table>
<thead>
<tr>
<th>Product</th>
<th>Features</th>
<th>Page</th>
</tr>
</thead>
</table>
| Cisco AS5350 Series Universal Gateways | • High performance, 2RU, universal gateway  
• Universal Port technology for multiple data, voice, and fax services on any port at any time  
• Supports broad range of async/ISDN/VoIP/wireless protocols  
• Two 10/100 Ethernet ports, two 8 Mbps serial backhaul ports  
• Cisco SS7 signaling gateway interoperability  
• Flexible, redundant backhaul methods | 7-3 |
| 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 | 7-6 |
| Cisco AS5850 Universal Gateway | The highest density universal gateway in the marketplace  
• Supporting up to 5 x CT3s, 96 T1s or 8 E1s of multiple data, voice, and fax services on any port at any time  
• Constant density regardless of codec type, ECAN or VAD settings  
• Extensive high availability features  
• TDM grooming capability | 7-9 |

Remote Dial Access Network Management

Suite of network management products for configuration, troubleshooting, and maintenance of Cisco dial access and VoIP solutions

SS7 Signaling & Softswitch Products

<table>
<thead>
<tr>
<th>Product</th>
<th>Features</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco PGW 2200 Softswitch</td>
<td>Call Agent providing signaling and call control functionality for PSTN Gateway and transit applications in international markets</td>
<td>7-12</td>
</tr>
<tr>
<td>Cisco BTS 10200 Softswitch</td>
<td>M GCP-based softswitch for large-scale Voice over IP and ATM applications</td>
<td>7-12</td>
</tr>
</tbody>
</table>

1. For Cisco 2509 and 2511 Access Servers, see page 1-14.

Broadband Cable

Headend and Distribution Hub Equipment

<table>
<thead>
<tr>
<th>Product</th>
<th>Features</th>
<th>Page</th>
</tr>
</thead>
</table>
| Cisco uBR7100 Series Universal Broadband Router | Entry-level, fixed-configuration CMTS and integrated router for low- to medium-density residential and M Ux customers served by Tier 2/Tier 3 cable operators or ISPs.  
• Choice of four DOCSIS- and EuroDOCSIS-qualified, fixed-configuration models that include: Cisco uBR7111, Cisco uBR7111E, Cisco uBR7114, and Cisco uBR7114E  
• Integrated upconverter/modulator on the cable interface  
• Embedded dual 10/100 BaseT Ethernet network interface  
• Additional network interface with a variety of LAN and WAN options  
• Supports up to 1,000 data customers | 7-13 |
| Cisco uBR7246VXR Universal Broadband Router | M orular, standards-based communications-grade CMTS and integrated router for high-growth broadband cable deployments and offers a wide variety of LAN and WAN interface options and processors | 7-15 |
Chapter 7 Broadband and Dial Access Products

Broadband and Dial Access Products at a Glance

<table>
<thead>
<tr>
<th>Product</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco uBR10012 Universal Broadband Router</td>
<td>Highest-capacity communications-grade CMTS and integrated router on the market today that delivers the services, performance, scale, and carrier-class reliability large cable operators and ISPs demand. Eight cable line cards that include support for Cisco Universal Broadband Router (uBR) line cards and the Cisco SG502 Broadband Processing Engine (BPE). Four network interfaces that include support for 1 Gbps over Gigabit Ethernet, 622 M bps over OC-12 Packet over SONET, and OC-48 Dynamic Packet Transport (DPT) Interface Module Set. Cisco uBR10012 supports up to 80,001 subscribers.</td>
</tr>
<tr>
<td>Cisco uBR900 Series Cable Access Router</td>
<td>Integrated DOCSIS-based cable modem and router with hardware accelerated IPSec VPN tunneling support that includes: Cisco uBR900 with 4 Ethernet, 1 CATV, 1 USB and 2 FXS ports that support telecommuter and small office DOCSIS-based data, VoIP, and VPN services. Cisco uBR905 with 4 Ethernet and 1 CATV port that supports DOCSIS-based data and VPN services.</td>
</tr>
<tr>
<td>Customer Premise Equipment (CPE)</td>
<td>1. Numbers are for reference only. Actual numbers for specific systems will vary depending on network/service loading, traffic, and other parameters.</td>
</tr>
</tbody>
</table>

DSL (Digital Subscriber Line) Access

<table>
<thead>
<tr>
<th>Product</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSL Access CPE*</td>
<td>Wide variety of Cisco router-based DSL CPE solutions for business-class to small office applications.</td>
</tr>
<tr>
<td>Broadband Services Aggregation</td>
<td>Cisco 6400 Series Router—ATM switching core, with up to 48,000 subscriber sessions per chassis. Cisco 7200 Series Router—Up to 16,000 broadband sessions on a 3 RU platform, including aggregation of PPP, PPPoE, and PPPoA. Cisco 7301 Series Router—1 RU Broadband Aggregation Router that is capable of delivering up to 16,000 sessions per chassis. Cisco 7400 Series Router—1 RU broadband optimized appliance that delivers up to 8,000 sessions per chassis. Cisco 10000 Series Router—A carrier-class router that supports up to 32,000 broadband sessions with 99.999 percent system uptime.</td>
</tr>
</tbody>
</table>

1. For ADSL, ISDN, and IDSL small office/home office (SOHO) customer premise equipment (CPE), see Chapter 1: Routers.

ATM Multiservice WAN Switching

<table>
<thead>
<tr>
<th>Product</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco BPX 8000 Series Switches</td>
<td>Large-scale Advanced ATM switch for service provider and large enterprise applications. Narrowband and broadband services in a single, highly reliable platform using a multifloor 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.</td>
</tr>
<tr>
<td>Cisco MGX 8850 Series Advanced ATM Multiservice Switches</td>
<td>Multiservice switch, scales from IS0 to OC-3/STM-1 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.</td>
</tr>
<tr>
<td>Cisco MGX 8830 Series Multiservice Switches</td>
<td>Multiservice switch that extracts and isolates broadband data from the ATM network and provides a single platform to manage services.</td>
</tr>
<tr>
<td>Cisco IGX 8400 Series Multiservice WAN Switches</td>
<td>ATM-based WAN switching, connects to public services for reduced leased-line costs. Available with 16, 32, 64, or 128 slots.</td>
</tr>
<tr>
<td>Cisco MGX 8200 Series Multiservice Gateways</td>
<td>Edge concentrators family provide a cost-effective narrowband multiservice solution for low- to mid-band ATM and Frame Relay aggregation with QoS management features.</td>
</tr>
</tbody>
</table>
Chapter 7  Broadband and Dial Access Products

Long Reach Ethernet

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.

 Cisco AS5350 Universal Gateway

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) and eight CT1/seven CE1s. It also includes integrated signaling link termination (SLT) functionality for direct connection to an 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.

Memory Information for Access Routers

<table>
<thead>
<tr>
<th>Router</th>
<th>Memory Type</th>
<th>Default Memory</th>
<th>Max Memory</th>
<th>Default Config. (Notes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco AS5350</td>
<td>System Flash</td>
<td>N/A</td>
<td>256 MB</td>
<td>Cisco AS5350HPX and Cisco AS5350HPX are NOT interchangeable</td>
</tr>
<tr>
<td></td>
<td>SDRAM</td>
<td>64 MB</td>
<td>64 MB</td>
<td>Cisco AS5350HPX and Cisco AS5350HPX are NOT interchangeable</td>
</tr>
<tr>
<td></td>
<td>Boot Flash</td>
<td>64 MB</td>
<td>16 MB</td>
<td>Cisco AS5350HPX and Cisco AS5350HPX are NOT interchangeable</td>
</tr>
<tr>
<td></td>
<td>Shared</td>
<td>64 MB</td>
<td>128 MB</td>
<td>Cisco AS5350HPX and Cisco AS5350HPX are NOT interchangeable</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cisco AS5350HPX and Cisco AS5350HPX are NOT interchangeable</td>
</tr>
<tr>
<td>Universal Gateway</td>
<td></td>
<td></td>
<td></td>
<td>Cisco AS5350HPX and Cisco AS5350HPX are NOT interchangeable</td>
</tr>
<tr>
<td></td>
<td>Main SDRAM</td>
<td>256 MB</td>
<td>512 MB</td>
<td>Cisco AS5350HPX and Cisco AS5350HPX are NOT interchangeable</td>
</tr>
<tr>
<td></td>
<td>Boot Flash (JV)</td>
<td>64 MB</td>
<td>128 MB</td>
<td>Cisco AS5350HPX and Cisco AS5350HPX are NOT interchangeable</td>
</tr>
<tr>
<td></td>
<td>System Flash (JV)</td>
<td>64 MB</td>
<td>128 MB</td>
<td>Cisco AS5350HPX and Cisco AS5350HPX are NOT interchangeable</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cisco AS5350HPX and Cisco AS5350HPX are NOT interchangeable</td>
</tr>
<tr>
<td></td>
<td>Feature Cards</td>
<td>512 MB</td>
<td>128 MB</td>
<td>Cisco AS5350HPX and Cisco AS5350HPX are NOT interchangeable</td>
</tr>
<tr>
<td></td>
<td>SDRAMS</td>
<td>512 MB</td>
<td>128 MB</td>
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<td>Flash</td>
<td>8 MB</td>
<td>64 MB</td>
<td>Cisco AS5350HPX and Cisco AS5350HPX are NOT interchangeable</td>
</tr>
</tbody>
</table>

Cisco AS5350 HPX and Cisco AS5350HPX are NOT interchangeable.
**Cisco AS5350 Universal Gateway**

### 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
- Cisco SS7 signaling gateway interoperability

**Competitive Products**

- Lucent/Ascend: Max TNT
- JCom/CommWorks: Total Control 1000
- Alcatel: 7505 Series
- Nuera: BTX Series
- Siemans: HiPath Series

### Specifications

**Feature**

- Processors: 250 MHz RISC processor
- Memory: SDRAM: 128 MB (default), 512 MB (maximum)
- Shared Input/output (I/O): 64 MB (default), 128 MB (maximum)
- Boot Flash: 8 MB (default), 16 MB (maximum)
- Layer 3 Cache: 2 MB
- Layer 3 Cache: 2 MB
- Feature Card Slots: Three slots
- Egress Ports: Two 1000-MB Ethernet ports
- Two 6-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, RIP2, RIPv2, IS-IS, OSPF, IGRP, EIGRP, BGPv4, BGPv6, AppleTalk Update-Based Routing Protocol (AURP)
- QoS Protocols: IP Precedence, Resource Reservation Protocol (RSVP), Weighted Fair Queuing (WFQ), Weighted Random Early Detection (WRED), M-TeLL, A-LAT, Telnet, Xremote
- Access Protocols: PPP, Serial Line Internet Protocol (SLIP), TCP, UDP, AAL5, AAL4, ATM, IPXCP, TCP, IPX, SLIP, Xremote
- Bandwidth Optimization: Multilink PPP (MPP), HDSL, TCP/IP header compression, Bandwidth Allocation Control Protocol (BACP), bandwidth on demand, multiprotocol associated signaling (MFAS), traffic shaping
- DSP Voice Features: Echo cancellation, programmable up to 128 ms
- 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 reorder tones with local country variants
- DTMF, Multifrequency (MF)

**Cisco AS5350 Universal Gateway**
### Chapter 7  Broadband and Dial Access Products

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco AS5350</th>
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</thead>
<tbody>
<tr>
<td>T.38 real-time fax relay</td>
<td>T.38 fax store and forward</td>
</tr>
<tr>
<td>Fax detection</td>
<td>Fax and modem passthrough</td>
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<tr>
<td>Open Signaling Protocol (OSPF)</td>
<td>Media Recording Control Protocol (MRCP)</td>
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<tr>
<td>Text-to-Speech (TTS) servers</td>
<td>Voice Extensible Markup Language (VoiceXML), Real-Time Streaming Protocol (RTSP), Extended Simple Mail Transfer Protocol (ESMTP)</td>
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</tr>
</tbody>
</table>

### Selected Part Numbers and Ordering Information

- **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, 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: DC AS5350 Chassis with Motherboard, IP Plus IOS, default memory
  - AS5350-DC: DC AS5350 Chassis with Motherboard, IP Plus IOS, default memory

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**Cisco AS5350 Universal Gateway**

- **AS5350-DC**: DC AS5350 Chassis with Motherboard, IP Plus IOS, default memory
Cisco AS5350 Software

S535AK8-12202XA Cisco AS5350 Series IOS ENTERPRISE PLUS IPSEC S6
S535AP-12202XA Cisco AS5350 Series IOS ENTERPRISE PLUS
S535CK8-12202XA Cisco AS5350 Series IOS IP PLUS IPSEC S6
S535CP-12202XA Cisco AS5350 Series IOS IP PLUS

Cisco AS5350 Memory Options & Spares

M EM -1U-P-A5S53 16M Bootflash, 64M System flash, 256M MAin, 128M Shared/OMemory
M EM-16BF-A5S53 A5S5350 16M B Boot Flash upgrade
M EM -64F-A5S53 A5S5350 64M B System Flash upgrade
M EM -128S-A5S53 A5S5350 128M B Shared/IO 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 Octa T1/PRI DFC card
AS535-DFC-8CE1= AS5350 Octa E1/PRI DFC card
AS535-DFC-60NP= AS5350 60 Nextport DFC card
AS535-DFC-108NP= AS5350 108 Universal Port Card

Cisco AS5350 Spare Accessories

AS535RM-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-DC-PWR= AS5350 DC Power Supply, Spare
AS535-DFC-CC= AS5350 DFC Carrier 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 AS5350 Universal Gateway Web site: http://www.cisco.com/go/as5350

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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.
Chapter 7  Broadband and Dial Access Products

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
• AC or DC power supply with dual fans
• Cisco SS7 signaling gateway interoperability

Competitive Products

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

Specifications

Processor Type
Cisco AS5400HPX: 380-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 480 calls (to 1CT3/16E1s)
Cisco AS5400: Voice or universal port services - to 480 concurrent calls (to 20T1s/16E1s) or Remote access services - to 480 calls (to 1CT3/16E1s)

SDRAM
256 MB (default), 512 MB (maximum)

Boot Flash
8 MB (default), 16 MB (maximum)

Layer 3 Cache
Cisco AS5400HPX: 8 MB
Cisco AS5400: 2 MB

Bandwidth Optimization
Multilink PPP (MLPPP), TCP/IP header compression, Bandwidth Allocation Control Protocol (BACP), Bandwidth on demand, Traffic shaping
Voice Compression

DSP Voice Features
- 128-bit echo cancellation, programmable up to 128 ms
- Transparent transcoding between A-law and μ-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
- T.37 fax store and forward
- T.38 real-time fax relay
- Fax detection
- Fax and modem passthrough
- Open Settlements Protocol (DSP)
- Media Recording Control Protocol (MRCP)
- Text to Speech (TTS) Servers
- Automatic Speech Recognition (ASR) Servers

SS7
- Integrated SS7 functionality

Network Security
- RADIUS or TACACS+: PAP or CHAP authentication, local user/password database
- DNS, 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, E1.1, E1.2, leased line, Frame Relay, G.703, G.704

ISDN Protocols
- Sync mode PPP, V.120, V.110 at rates up to 38400 bps
- Network- and User-side ISDN
- DSS1
- 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 over (transmission) Group 3, standards EIA 2328 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.100, V.110

Full Cisco IOS Support
- IP Plus and Enterprise Plus feature sets

Console and Auxiliary Ports
- Asynchronous serial (RJ-45)

Chassis Dimensions
- 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, carrier-class gateway, offering unparalleled capacity and high availability. The Cisco AS5850 is specifically designed to meet the demands of large, innovative service providers, supporting up to five channelized T3s (CT3s), 96 T1s or 86 E1s of data, voice, and fax services on any port at any time. It offers high availability features such as hot-swap on all cards, load-sharing and redundant hot-swappable power supplies, redundant route processing cards and call admission control to ensure 99.999-percent availability.

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
Cisco AS5850

When a Customer Needs These Features
• Supporting up to 5 x CT3s, 96 T1s or 86 E1s of multiple data, voice, and fax services on any port at any time
• 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
• High scalability—up to 3360 ports in a 14 RU chassis and provides for 6 times growth in same chassis
• Hot-swap redundant power supplies and power feeds
• Redundant DSPs and RSC
• 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
Chapter 7  Broadband and Dial Access Products

Competitive Products

- 3Com: TC 2000
- Lucent: APX 8000
- Siemens: HiPath Series
- Alcatel: 7505 Series

Specifications

Feature  | Cisco AS5850
--- | ---
Slots  | 12 feature board slots, 2 RSC slots
Processor Type  | 266 MHz RISC processor plus 2MB of L3 cache SDRAM
RSC Switch Fabric  | 5 Gbps, Layer 3/4 switching
Memory  | 128 MB SDRAM with ECC per RSC
Trunk Cards  | Single CT3 plus 216 DSP Channel feature card
Universal Port Card  | 32/4 Channel DSP-feature card
Egress Ports  | Dual Gigabit load-balanced redundant Ethernet ports with QoS interfaces for user traffic, One 10/100-M bps Ethernet port with RJ 45 connector for management traffic
LAN Protocols  | IP
Service Support  | Port Policy Management and SS7, CLT
Routing Protocols  | RIPv1, RIPv2, OSPF, 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, DNS, CSD, call type pre-authentication, inbound/outbound traffic filtering (including IP), SNMP V2, V3
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, policy-based routing
Channelized T1  | PRI, robbed-bit signaling, loop start, immediate start, and wink start protocols
Channelized E1  | CAS, 16 E1, PRI
ISDN Protocols  | Sync mode PPP, V.120, V.110 at rates up to 38400
ECAN up to 128kbps
F.38 real-time fax relay
Fax detection
Fax and modem passthrough
Modem Protocols  | V.90 or V.92 standard supporting line rates of 56kbps to 14.4kbps in 28.8 increments
V.44 supporting increased throughput by more than 100 percent for Internet browsing
Fax out (transmission) Group 3, standards V.33, V.34, V.29, V.27, V.21
K56flex at 56000 to 32000 in 2000-bps increments
ITU-T V.34 Annex 12 at 38400 and 31200 bps
Voice Protocols  | V.34, V.32, 2.100 at rates up to 38400 bps
Wireless Protocol  | V.109
Console and Auxiliary Ports  | 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
Remote Dial Access Network Management Products

Universal Gateway Manager (UGM)

Network management applications and tools are critical for the successful deployment and operations of voice or data services. The Cisco Universal Gateway Manager (UGM) is an element management system for Cisco AS5000 Universal Gateways. The Cisco UGM enables network operators and administrators to efficiently deploy, manage and maintain Cisco AS5000 Universal Gateways supporting Voice over IP, managed voice, PSTN gateway, and dial access services.

Key Features

• Enables the efficient deployment and configuration of Cisco AS5000 Universal Gateways
• Monitors the operational status of Cisco AS5000 Universal Gateways and their subcomponents so that corrective action can be taken quickly
• Supports the rapid reconfiguration of Cisco AS5000 Universal Gateways for network or service changes
• Collects and presents a wide range of performance-related statistics for monitoring gateway and network efficiency
• Co-resides with Cisco MGC Node Manager (MNM) for Cisco PGW 2200 PSTN Gateway node management
• Provides interfaces to support its integration with existing network management applications

For More Information
See the Cisco Universal Gateway Manager Web site: http://www.cisco.com/go/ugm

Cisco Universal Gateway Call Analyzer

The Cisco Universal Gateway Call Analyzer (UGCA) tool monitors and troubleshoots Cisco AS5000 universal gateways that support dialup services. The Cisco Universal Gateway Call Analyzer complements other network management system (NMS) applications, adding call-level analysis capabilities that are not available with standard NMS applications.

Maintaining high call-success rates and quality connections are key challenges for any dial service provider. These metrics directly affect customer satisfaction and are fundamental indicators of network performance and efficiency. Numerous issues may cause service degradation, which may be rapid or may occur slowly. While public switched telephone network (PSTN) issues are frequently the source of problems, they are especially difficult to identify. Cisco AS5000 universal gateways collect the detailed call-characteristic data needed to detect and diagnose issues that affect service. The Cisco Universal Gateway Call Analyzer is the window into this data, providing analysis and reporting features through an intuitive Web interface.

For More Information
See the Cisco Universal Gateway Call Analyzer Web site: http://www.cisco.com/go/ugca
Cisco Resource Policy Management System

Wholesalers face a challenge when delivering service level agreements (SLAs) on a common network, especially when providing a range of services for different customers. The Cisco Resource Policy Management System (RPMS) is a software tool that provides policy management of platform resources. With Cisco RPMS, wholesalers are able to offer a variety of services to a variety of customers on a single set of gateways. Cisco RPMS offers not only effective resource management but the capability to build and deliver flexible service models that fit customers’ unique requirements. Cisco RPMS can grow to support a wholesaler’s changing needs, scaling as the network expands and delivering the services that customers demand, including wholesale dial, access to virtual private network (VPN) services.

Selected Part Numbers and Ordering Information

<table>
<thead>
<tr>
<th>Resource Policy Management System</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR5X-PM-LIC</td>
<td>Port management license for 1 port (includes Resource Pool Manager, Call Tracker)</td>
</tr>
<tr>
<td>CRPMS-2.0</td>
<td>Cisco Resource Pool Manager Server v2.0 (1 server)</td>
</tr>
<tr>
<td>CRPMS-2s-2.0</td>
<td>Cisco Resource Pool Manager Server v2.0 (2 servers)</td>
</tr>
<tr>
<td>CRPMS-6s-2.0</td>
<td>Cisco Resource Pool Manager Server v2.0 (6 servers)</td>
</tr>
<tr>
<td>CRPMS-UPGRADE-2.0</td>
<td>Single Server Upgrade License from RPM 5.x to version 2.0</td>
</tr>
</tbody>
</table>

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 Universal Gateway Manager: [http://www.cisco.com/go/ugm](http://www.cisco.com/go/ugm)

SS7 Signaling & Softswitch Products

Cisco AS5x00 series products interoperate with various SS7 and Softswitch products, including the Cisco SC2200 Signaling Controller, the Cisco PGW 2200 Softswitch and the Cisco BTS 10200 Softswitch.

Cisco SC2200 Signaling Controller

Please see PGW 2200 Softswitch.

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.
Cisco BTS 10200 Softswitch
The Cisco BTS 10200 Softswitch provides call-control intelligence for establishing, maintaining, routing, and terminating voice calls. The Cisco BTS 10200 Softswitch also serves as an interface to enhanced service and application platforms. 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 efficiencies.

For More Information
See SS7 Signaling & Softswitch Products Web site:

Additional Remote Dial Access Products
• In addition to the AS5350/AS5400/AS5850 series access gateways, the Cisco 2600/3600 series routers (see pages 1-16 and 1-22) also support dial-up, data, and voice access via network and modem modules, and voice interface cards
• For sites that require access via multiple external analog modems, the AS2509/AS2511-RJ access servers (see page 1-14) and 2600 series routers (see page 1-16) are ideal for low-density, dial applications
• For small office ISDN connectivity, see Cisco 800 series routers (see page 1-9)

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 multitenant (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 specifications. The Cisco uBR7111E and Cisco uBR7114E models are tComLabs qualified to EuroDOCSIS 1.0 specifications. 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.
### Chapter 7  Broadband and Dial Access Products

#### When to Sell

**Sell This Product Cisco uBR7100 Series**

**When a Customer Needs These Features**

- 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 combined router and CMTS with an integrated upconverter, and embedded Network Interface.
- Standards-based: DOCSIS 1.0 and DOCSIS 1.1-based; EuroDOCSIS models available.
- Reliable operation to ensure the system remains online.
- Uses Cisco IOS Software.

#### Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>uBR7111 and uBR7114</th>
<th>uBR7111E and uBR7114E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Memory</strong></td>
<td>Flash: 48 MB; System: 128 MB</td>
<td>Flash: 48 MB; System: 128 MB</td>
</tr>
<tr>
<td><strong>Line Card with Integrated Upconverter (Cable Plant Interface)</strong></td>
<td>uBR7111: 1 downstream and 1 upstream</td>
<td>uBR7114: 2 downstream and 4 upstreams</td>
</tr>
<tr>
<td>Integrated Upconverter</td>
<td>DOCSIS Annex A, 6 MHz</td>
<td>DOCSIS Annex A, 6 MHz</td>
</tr>
<tr>
<td>High level output: =+61 dBmV, 55 to 858 MHz</td>
<td>Optimized for 64 and 256 QAM</td>
<td></td>
</tr>
<tr>
<td>Optimized for 64 and 256 QAM</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Port Adapter (WAN or backbone Interface)</strong></td>
<td>Embedded dual 10/100 BaseT Ethernet (TX/E) provided</td>
<td>Same as Cisco uBR7111 and Cisco uBR7114</td>
</tr>
<tr>
<td>Supports one additional PA; options include the following using Cisco IOS Release 12.1(8)EC minimum:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethernet:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-4E-4-port Ethernet 10BASE-T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Fast Ethernet:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-FE-TX-1-port 100BASE-TX Fast Ethernet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-FE-FX-1-port 100BASE-FX Fast Ethernet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-2FE-TX-2-port 100BASE-TX Fast Ethernet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-2FE-FX-2-port 100BASE-FX Fast Ethernet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serial:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-MC-CT-1-4-port multichannel T1 Port Adapter with integrated CSU/DSUs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-MC-ZT-1-2-port multichannel T1 Port Adapter with integrated CSU/DSUs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-E3-1-port E3 serial Port Adapter with E3 DSU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-T3-1-port T3 serial Port Adapter with T3 DSU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-2E3-2-port E3 serial Port Adapter with E3 DSUs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-2T3-2-port T3 serial Port Adapter with T3 DSUs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-4T-4-port serial Port Adapter, enhanced</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-4E1G-75-4-port E1-G.703 serial Port Adapter (75-ohm/unbalanced)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-4E1G-120-4-port E1-G.703 serial Port Adapter (120-ohm/balanced)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-2H-2-port HSSI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• ATM:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-A3-8T1MA, 8-port ATM inverse T1 multiplexer Port Adapter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-A3-OC3SM(L)—1-port OC-3c ATM, PCI-based single-mode long reach port adapter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-A3-OC3M(M)—1-port OC-3c ATM, PCI-based multimode Port Adapter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-A3-OC3SM—1-port OC-3c ATM, PCI-based single-mode intermediate reach port adapter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PA-PQs-OC3s(M)1,1-port Packet/SONET OC3c/STM 1 single-mode Port Adapter</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Cisco uBR7246VXR Universal Broadband Router

The Cisco uBR7246VXR—a member of the Cisco uBR7200 Series—combines the functionality of a CMTS with an advanced router. The Cisco uBR7246VXR provides a single, multiservice, scalable platform that gives cable companies and ISPs the ability to deliver IP data and VoIP services to DOCSIS or EuroDOCSIS-compliant cable modems and set-top boxes. The Cisco uBR7246VXR is CableLabs qualified to DOCSIS 1.1, as well as PacketCable 1.0 specifications. The product is also tComLabs qualified to EuroDOCSIS 1.1 specifications.

When to Sell

Sell This Product
Cisco uBR7246VXR

When a Customer Needs These Features
• Positioned for high-growth cable deployments
• Flexible port expansion for multiservice deployment options
• Supports up to 8,000 subscribers per chassis with 3.2 Gbps back plane
• 4 line card slots, 2 port adapter slots, 1 I/O controller slot, 1 NPE slot, and 1 clock card slot for VoIP

Key Features

• Standards-based—Supports DOCSIS/EuroDOCSIS 1.0 and DOCSIS 1.1
• Modularity allows for customized configuration per plant characteristics for optimization of topology and network bandwidth
• Cisco IOS Software—Delivers proven stability and offers advanced features such as multiprotocol routing, tunneling, bandwidth management, QoS, guaranteed service levels, service-level monitoring and many CPE management options
• Ease of management and upgrades—Supports online insertion and removal of components to allow seamless upgrades of port adapters, line cards, and power supplies without service interruption. Provides single, centralized point of administration for remote devices

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco uBR7111 and uBR7114</th>
<th>Cisco uBR7111E and uBR7114E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Options</td>
<td>Single; 100 to 240 VAC input voltage</td>
<td>Single; 100 to 240 VAC input voltage</td>
</tr>
<tr>
<td>Minimum Cisco IOS Software Release</td>
<td>12.1(18)EC minimum</td>
<td>12.1(18)EC minimum</td>
</tr>
</tbody>
</table>

For More Information

See the Cisco uBR7100 series Web site: http://www.cisco.com/go/ubr7100
Cisco uBR10012 Universal Broadband Router

The Cisco uBR10012 Universal Broadband Router is a new class of CMTS, that handles the volume, capacity, and complexity of large cable headends or distribution hubs. It combines the revenue-generating features and stability of the market-leading Cisco uBR7200 Series with an architecture that is optimized for aggregation and virtually limitless future growth. The Cisco uBR10012 goes beyond the traditional “carrier class” definition, to deliver 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 DOCSIS 1.0 and DOCSIS 1.1 specifications. The product is also tComLabs qualified to EuroDOCSIS 1.0 specifications.

When to Sell
When a Customer Needs These Features
Cisco uBR10012
• High-end throughput, capacity, and service handling for a mix of IP data, voice, and video services over cable—supporting a wide variety of applications, media, session types, subscriber profiles, and access devices
• Support for advanced feature sets, varying QoS requirements, service-level differentiations, and transport strategies (MPEG, IP, multicast, unicast, broadcast) that include implementing flow control to various cable CPE devices

Key Features
• Highest-capacity CMTS that leverages the proven stability of the industry-standard Cisco uBR7200 Series, the highly scalable architecture of the Cisco 10000 Internet Router, and feature-rich Cisco IOS Software
• Multiservice support, optimized to provide high throughput and accelerated processing using PXF technology; exceptional throughput on each connection in the chassis is achieved
• Standards-based design, support includes DOCSIS 1.0 and DOCSIS 1.1
• Reliability—Designed to eliminate single points of failure and allow technicians to swap out cards online; architected to provide redundancy throughout the system that includes redundant processing engines, bus interconnects, and power supplies
Chapter 7 Broadband and Dial Access Products

- Secure, scalable choices protect your investment and ensure current and future business growth can be accommodated; the architecture supports planned system and network expansion, including scaling IP services forwarding capacity, increasing connection speeds and densities, and extensive route scaling techniques.

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco uBR10012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modular Slots</td>
<td>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</td>
</tr>
<tr>
<td>Supported Cards</td>
<td>Cable line cards that include: Cisco uBR line cards with a Cisco Line Card Processor (LCP) and Cisco 5X20 BPE, Timing, Communications, and Control Plus (TCC+) card, Gigabit Ethernet (GE) network uplink card, OC-12 Packet Over SONET (POS) network uplink card, OC-48 DPT Interface</td>
</tr>
<tr>
<td>Processor Type</td>
<td>Parallel Express Forwarding (PXF)</td>
</tr>
<tr>
<td>Flash Memory</td>
<td>48 MB (default); 128 MB (maximum)</td>
</tr>
<tr>
<td>DRAM Memory</td>
<td>512 DRAM (default)</td>
</tr>
<tr>
<td>Software Supported</td>
<td>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</td>
</tr>
<tr>
<td>Power Supply</td>
<td>DC, AC</td>
</tr>
<tr>
<td>Hot-Swappable</td>
<td>Yes</td>
</tr>
<tr>
<td>Backplane Capacity</td>
<td>51.2 Gbps</td>
</tr>
<tr>
<td>Physical Dimensions (H x W x D)</td>
<td>Height: 11.25 in. (29.1 cm) — 18 rack units (RU) Width: 17.2 in. (43.7 cm) Depth: 22.75 in. (57.8 cm) 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</td>
</tr>
<tr>
<td>Weight</td>
<td>Weight: 235 lb (106.6 kg) fully configured chassis</td>
</tr>
</tbody>
</table>

For More Information

See the Cisco uBR10012 Web site: [http://www.cisco.com/go/ubr10012](http://www.cisco.com/go/ubr10012)

Cisco RF Switch

The Cisco RF Switch works with the Cisco uBR10002 and uBR7246VXR Universal Broadband Router to provide a fully redundant DOCSIS system that enables cable service providers to achieve PacketCable system availability, minimize service disruptions, and simplify operations. The Cisco RF Switch is part of Cisco’s newest high-availability N+1 solution set. In combination with the Cisco uBR10012 and uBR7246VXR, the Cisco RF Switch enables a fully redundant CMTS with no single point of failure. The product maximizes density with more than 250 MCX-type connectors that interface the Cisco uBR10012 and the cable plant. The Cisco RF Switch contains RF combiners/splitters, RF switch logic, and RF switch drivers. The product offers ten upstream switch modules, three downstream switch modules, an Ethernet controller module, an AC or DC power supply, and color coding, preterminated cabling.

When to Sell

**Cisco RF Switch**

As cable service providers enter the VoIP market, high availability (24x7 service) for broadband cable IP services is becoming a requirement. The Cisco RF Switch enables cable service providers to achieve PacketCable system availability, minimize service disruptions, and simplify operations.

When a Customer Needs These Features

<table>
<thead>
<tr>
<th>Sell This Product</th>
<th>When a Customer Needs These Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco RF Switch</td>
<td>As cable service providers enter the VoIP market, high availability (24x7 service) for broadband cable IP services is becoming a requirement. The Cisco RF Switch enables cable service providers to achieve PacketCable system availability, minimize service disruptions, and simplify operations.</td>
</tr>
</tbody>
</table>
Key Features

- Front-panel serviceability with module Hot Swap capability that eliminates downtime for RF paths
- Modular upstream and downstream capacity with ten upstream, three downstream, and one blank slot that optimizes the serviceability of the CMTS; each of the 14 modules represent a port on a cable line card. Each switch module contains seven working or “active” inputs, plus one protect or “standby” input and seven protected outputs. Inputs are connections from the Cisco uBR10012 and uBR7246VXR to the Cisco RF Switch. Outputs are connections from the Cisco RF Switch to the HFC plant.
- Fully passive working path; hardware components do not affect data and VoIP services
- Active components only in protect path; servicing of protect cards offer no disruption to data and VoIP services
- Position-sensing latching relays; robust design maintains operation during power disruptions
- Flexible, external design with more than 250 connectors—unmatched port density
- N+1 redundancy

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco RF Switch</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input Power Requirements</strong></td>
<td>AC: 100 to 240 VAC, 50 or 60 Hz, operating range: 90 to 254 VAC.</td>
</tr>
<tr>
<td></td>
<td>DC: -48 to -60 VDC, operating range: -40.5 to -72 VDC, 200 mVpp ripple/noise</td>
</tr>
<tr>
<td><strong>Environmental</strong></td>
<td>Operational temperature range: 0 to +40°C</td>
</tr>
<tr>
<td></td>
<td>Operating temperature range: -5 to +55°C</td>
</tr>
<tr>
<td><strong>Unit Control</strong></td>
<td>10BaseT Ethernet—SNMP</td>
</tr>
<tr>
<td></td>
<td>Switching time from active (working) to standby (protect): 150 mS maximum after SNMP command</td>
</tr>
<tr>
<td></td>
<td>Cisco uBR10012 and uBR7246VXR</td>
</tr>
<tr>
<td><strong>Connectors</strong></td>
<td>RF connectors: MCX</td>
</tr>
<tr>
<td></td>
<td>AC power: IEC320 type</td>
</tr>
<tr>
<td></td>
<td>DC power: Three terminal block</td>
</tr>
<tr>
<td></td>
<td>Ethernet: RJ-45</td>
</tr>
<tr>
<td></td>
<td>RS-232 Bus: 9-pin male D</td>
</tr>
<tr>
<td><strong>Reliability</strong></td>
<td>41,000 MTBF @ +50°C, as calculated by Bellcore 5, 90 percent confidence factor</td>
</tr>
<tr>
<td><strong>Physical</strong></td>
<td>Dimensions (H x W x D): 19 x 15.5 x 5.25 in. (482 x 384 x 132 mm)</td>
</tr>
<tr>
<td></td>
<td>Weight: 36 lbs</td>
</tr>
<tr>
<td><strong>Input Power Requirements</strong></td>
<td>AC: 100 to 240 VAC, 50 or 60 Hz, operating range: 90 to 254 VAC.</td>
</tr>
<tr>
<td></td>
<td>DC: -48 to -60 VDC, operating range: -40.5 to -72 VDC, 200 mVpp ripple/noise</td>
</tr>
</tbody>
</table>
Broadband Cable—Customer Premise Equipment (CPE)

Cisco uBR900 Series Cable Access Routers

The Cisco uBR900 Series Cable Access Routers provide commercial services for cable operators, allowing them to expand their broadband service offerings. Both the Cisco uBR905 and Cisco uBR925 support IP data transmission over a cable plant and offer hardware-accelerated IPSec VPN support.

When to Sell

Sell This Product
Cisco uBR905 Cable Access Router
Cisco uBR925 Cable Access Router

When a Customer Needs These Features
- Data-only broadband services (or voice separately via Ethernet)
- High-speed, secure remote tunneling via hardware accelerated IPSec VPN
- Two voice (VoIP) connections via RJ-11 ports
- Data broadband services, router functionality, and VPN support
- Easy-to-manage solution for telecommuters and small offices

For More Information
See the Cisco RF Switch Web site: http://www.cisco.com/go/rfswitch

Environmental
• Operational temperature range: 0 to +40°C
• Operating temperature range: -5 to +55°C

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;
• 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;
• Downstream output return loss: >15.0 dB 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 CM T S 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: >10 dB

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.
Key Features

- Integrated high-speed cable modem and router that operates with any DOCSIS 1.1 or DOCSIS 1.0-compliant CMTS; both Cisco uBR900 Series models are 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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco uBR905</th>
<th>Cisco uBR925</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ports</td>
<td>4-port 10Base-T Ethernet hub, 1-port console, 1-port CATV (Female F Connector)</td>
<td>4-port 10Base-T Ethernet hub, 1-port USB, 2 ports RJ-11, 1-port console, 1-port CATV</td>
</tr>
<tr>
<td>Routing Features</td>
<td>NAT/PAT, DHCP Server</td>
<td>Same as Cisco uBR905</td>
</tr>
<tr>
<td>Security Features</td>
<td>56-bit IPsec, 3DES IPsec optional, IPsec hardware acceleration, firewall optional</td>
<td>Same as uBR905</td>
</tr>
<tr>
<td>Voice Support</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

For More Information

See the uBR900 series Web site: [http://www.cisco.com/go/ubr900](http://www.cisco.com/go/ubr900)

Remote Cable Access—Network Management Products

Cisco Cable Manager

Cisco Cable Manager is a client/server application that helps cable service providers deploy, maintain, monitor and troubleshoot cable equipment on an HFC network. The product manages DOCSIS and EuroDOCSIS-compliant CMTS and CPE, providing both operations center visibility, as well as technician access.

Cisco Cable Diagnostic Manager

Cisco Cable Diagnostic Manager is a web-based tool to help Customer Service Representatives at cable companies better handle subscriber calls and determine where problems reside in the network. Cisco Cable Diagnostic Manager provides status summary for the network neighborhood and fiber node, status on the DOCSIS or EuroDOCSIS-certified cable modem, as well as status on the Cisco CMTS products: Cisco uBR10012, uBR7200 Series, and uBR7100 Series.

Cisco Broadband Troubleshooter

Cisco Broadband Troubleshooter provides an efficient tool to help network operations center (NOC) personnel and field technicians detect, diagnose, and isolate problems between the cable plant and connected DOCSIS CPE devices. 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.
Cisco Broadband Configurator

Cisco Broadband Configurator is a GUI-based tool designed to collect information needed to generate and download configuration files for DOCSIS or EuroDOCSIS cable modems and set-top boxes. There are two versions of the tool: a free, web-based version accessible via Cisco.com, and a stand-alone Java-based desktop version. Cisco Broadband Configurator enables point and click configuration of CPE values for RF, class of service, vendor information, SNMP parameters, BPI, TFTP, telco-return attributes, and CPE data.

For More Information

See the Cable Manager Web site: [http://www.cisco.com/go/cablemgr](http://www.cisco.com/go/cablemgr)

See the Cisco Cable Troubleshooter Web site: [http://www.cisco.com/go/troubleshooter](http://www.cisco.com/go/troubleshooter)

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)
- G.SHDSL WAN Interface Cards (WICs) for 1700, 2600/2600XM, 3600 Series (see Chapter 1: Routers)
- Cisco IAD 2400 Series (w/G.SHDSL) (page 4-21)

Broadband Services Aggregation

The Cisco broadband aggregation portfolio includes the Cisco 6400 Broadband Aggregator, Cisco 7200 Series Router, the Cisco 7400 Series Internet Router, and the Cisco 10000 Series Internet Router. This portfolio covers all possible broadband aggregation markets. The Cisco 6400 and Cisco 10000 Series routers are carrier class broadband aggregation routers designed to provide high-density, high-performance services while maintaining the high-availability standards of large-scale carrier deployments. The Cisco 7200, Cisco 7301 and Cisco 7400 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 7400: Highest density PPP aggregation per rack-unit
- Cisco 7301: Highest Density PPP aggregation per rack-unit
- Cisco 7200: Most versatile platform
- Cisco 6400: Only platform offering ATM switching and broadband aggregation
- 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 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 1-31 for more information on the 7200 series.

**Cisco 7301 Series**

When ordered as 7301-BB-8K and 7301-BB-16K 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 7400 Series**

When ordered as a part number 7401ASR-BB, the 7400 series provides high-performance broadband services aggregation like the 7200, but in a low-power one rack unit (1 RU) form factor. It offers one port adapter (PA) slot supporting over 40 standard 7200 series PAs, including T1/E1, DS3, OC-3, Fast Ethernet, and Gigabit Ethernet; making it ideal for small- and medium-density applications. See page 1-38 for more information on the 7400 series.

**Cisco 10000 Series**

With recent enhancements, the Cisco 10000 is the industry’s only integrated edge router that delivers highly available, line-rate performance without compromises for service providers deploying 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 32,000 (61,500 in the future) broadband subscribers, hardware-accelerated PPP over Ethernet and PPP over ATM, routed bridge encapsulation and 1483 routing. See page 1-47 for more information on the 10000 series.
Cisco 6400 Series
The Cisco 6400 is designed for use in high-availability environments such as service provider central offices, and corporate premises; and aggregates access media (DSL, cable, wireless, and dial) to serve as the intelligent equal access point, allowing multiple operating companies and service providers access to end users. It includes switch, router, and line card redundancy. The Cisco 6400 is a high-performance service gateway that enables the delivery of network services, VPNs, and voice- and entertainment-driven traffic over any access media. ATM interfaces connect the Cisco 6400 to dial access servers, DSLAMs, and Cisco IP DSL Switches; ATM and packet interfaces connect to the network core.

Key Features
• Session scalability and modular design—The Cisco 6400 represents a quantum leap in session scalability, capable of scaling from 2000 subscribers in its entry level configuration to 96,000 subscribers in a full configuration.
• Routing and VPN scalability—Using the Cisco 6400, service providers can simultaneously route end-user traffic over secure, independent pathways exceeding 1000 different domains or end destinations, with an aggregate throughput of over 2.4 Gbps forwarding capacity for handling even the most bandwidth-intensive broadband traffic.

For More Information
See the 6400 series Web site: http://www.cisco.com/go/6400

ATM Multiservice WAN Switching
Cisco BPX 8600 Series—Advanced ATM Multiservice Switches
The Cisco BPX 8600 series is standards-based 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. 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) today, and this functionality can be easily added to any BPX switch already installed in the field.

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 the new 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 and included 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

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, 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 for flexible network and services evolution. The Cisco MGX 8830, with a switching capacity of up to 1.2 Gbps, acts as a standalone switch, and 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 MGX 8200 Series

Cisco MGX 8230 Edge Concentrator

The Cisco MGX 8230 Edge Concentrator provides the most cost-effective gateway for narrowband services in space and power limited situations. It can act as a stand-alone gateway or as an edge concentrator for the Cisco BPX 8600, Cisco MGX 8850 with PXM-45, and IGX 8400 series multiservice switches. The MGX 8230 offers a full range of narrowband service interfaces and a switching capacity up to 1.2 Gbps.

For More Information
See the Cisco MGX 8200 Series Web site: http://www.cisco.com/go/mgx8200

Cisco IGX 8400 Series Multiservice WAN Switch

Efficient bandwidth utilization, intelligent QoS management features, and carrier-class reliability make the IGX 8400 series switch the ideal choice for meeting unique Wide-Area Networking (WAN) needs. This series provides the ATM backbone required to deliver data, voice, fax, and video services with guaranteed quality of service (QoS). The IGX 8400 series switch connects to public services for reduced leased-line costs by maximizing the use of these WAN links. Available with 8, 16, or 32 slots, the IGX 8400 series switches offer high flexibility to meet a wide range of Enterprise and Service Provider needs. Tight integration with the broad range of Cisco access products enables you to efficiently and cost-effectively run backbone-to-branch data, voice, fax, and video services between premises. By integrating IOS technology, the Cisco IGX 8400 series switch helps deliver a seamless migration path to technologies such as VoIP and MPLS.
Cisco Long Reach Ethernet Solution

The Cisco Long-Reach Ethernet solution meets the demands of high-bandwidth applications while leveraging existing copper wiring infrastructures. Catalyst® 2950 Long-Reach Ethernet (LRE) Series switches enable enterprise and service provider customers to extend intelligent Ethernet services over existing phone and legacy wiring, at distances of up to 5000 feet. Cisco is the only company with the breadth of technologies that allow customers to deliver intelligent network services across any combination of wired and wireless infrastructures.

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 intelligent services, such as 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 Cisco Catalyst 2950 LRE switches consist of the following devices-which are based upon the Enhanced Image (EI) Software for the Catalyst 2950 Series.

- Catalyst 2950ST-24-LRE-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)
- Catalyst 2950ST-8-LRE-8 LRE ports + 2 10/100/1000BASE-T ports + 2 SFP ports (two of the four uplinks active at one time)

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 IGMP 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 | Extreme Networks: Alpine chassis with FN-80 blade (Ethernet over VDSL) |
| Tut Systems: IntelliPOP VDSL | Huawei: Quidway s3026v |

Specifications

<table>
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<tr>
<th>Feature</th>
<th>Cisco 2950ST 24 LRE</th>
<th>Cisco 2950ST 8 LRE</th>
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<tbody>
<tr>
<td>Fixed Ports</td>
<td>24 Long-Reach Ethernet ports and four 10/100 Ethernet ports and two 10/100/1000BASE-T ports + 2 Small Form-factor Pluggable (SFP) ports (two of the four uplinks active at one time)</td>
<td>12 Long-Reach Ethernet ports and four 10/100 Ethernet ports and two 10/100/1000BASE-T ports + 2 Small Form-factor Pluggable (SFP) ports (two of the four uplinks active at one time)</td>
</tr>
<tr>
<td>Backplane</td>
<td>8.8 Gbps</td>
<td>Same as Cisco 2950ST 24 LRE</td>
</tr>
</tbody>
</table>
Cisco Building Broadband Service Manager (BBSM) Version 5.2

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 property owners and service providers 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.

The Cisco BBSM has been designed for compatibility with Cisco access-layer LAN products to provide a complete solution that enables service providers or property owners to create, market and operate broadband access services in new vertical markets such as: Hospitality, Higher-Education, and Public Access.
Cisco BBSM Hotspot Server Version 1.0

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 visitor access in larger 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, guests and other temporary users. Use Cisco BBSM Hotspot to manage and operate broadband access services in public hotspots, small hotels, and public overlays on business networks.

For More Information
See the BBSM Web site: http://www.cisco.com/go/bbsm
# Optical Transport

## Optical Transport Products at a Glance

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<th>Product</th>
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<td><strong>Cisco ONS 15200 Metro DWDM Series</strong></td>
<td>Cisco ONS 15262 and ONS 15301 DWDM solutions • Supports a mixture of point-to-point, hubbed, and meshed traffic patterns (SDH/SONET, Gigabit Ethernet over a range of line rates up to 2.5 Gbit/s) • Modular architecture; capacity may be added channel-by-channel in a highly cost-effective manner • High transmission efficiency for more channels, nodes and greater distances • Compact design</td>
<td>8-3</td>
</tr>
<tr>
<td><strong>Cisco ONS 15302/15305 SDH Multiservice CPE &amp; Aggregation Platforms</strong></td>
<td>The Cisco ONS 15302/ONS 15305 Multiservice CPE and aggregation solutions are ultra-compact integrated systems that extend next-generation optical networks (access nodes or CPE): • Low Cost Access or CPE Platform • E1, E3, DS3, 10/100 BaseT Ethernet and GigE</td>
<td>8-3</td>
</tr>
<tr>
<td><strong>Cisco ONS 15327 SONET Multiservice CPE &amp; Aggregation Platform</strong></td>
<td>Metro Edge Multiservice Provisioning Platform (M SPP) • Highly cost-efficient for delivering multiservices to the metro edge • Aggregates and switches TDM, 10/100/GigE, data and video services • Very small footprint</td>
<td>8-4</td>
</tr>
<tr>
<td><strong>Cisco ONS 15454 SONET and ONS 15454 SDH Platforms</strong></td>
<td>Industry-leading SONET Multi-service Provisioning Platform (M SPP) and SDH M SPP: • Aggregates DS1, DS3, STS-1, OC-3, OC-12, OC-48 • Supports OC-192 and multitwavelength DWDM optics • Wide range of data interfaces, including 10/100/GigE, data and video</td>
<td>8-4</td>
</tr>
<tr>
<td><strong>Cisco ONS 15501 Erbium Doped Fiber Amplifier</strong></td>
<td>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</td>
<td>8-5</td>
</tr>
<tr>
<td><strong>Cisco ONS 15530 Metro DWDM Aggregation Platform</strong></td>
<td>Metro Optical DWDM Multiservice Aggregation Platform • Enables storage and data networking, transparent wavelength services, and legacy applications • ESCON Aggregation up to 40 channels on 1 wavelength • Scales from 2.5Gbps to 10Gbps • Supports wide range of protocols over optical infrastructure • Highly resilient network with flexible topology design options</td>
<td>8-5</td>
</tr>
</tbody>
</table>
Sample Metro Optical Transport Solution Overview — Delivering Multiservices to the Edge

### Products and Features

**Cisco ONS 15450 Extended Services Platform**
- Highly modular and scalable next-generation Dense Wave Division Multiplexing (DWDM) platform
- Ideal for enterprises and service providers
- Delivers the integration of data, storage and metro networking
- Ultra-high bandwidth intelligent optical infrastructure
- Supports any packet on any wavelength from any platform

**Cisco ONS 15600 Multiservice Switching Platform (SONET/SDH)**
- The Cisco ONS 15600 MSSP is a true multiservice switch, providing carrier class reliability, availability, serviceability, operations, and management.
- Combines the functionality of multiple metro systems including SONET/SDH multiplexers and digital cross-connect network elements
- Scalable, easy-to-use platform supports all metrotopologies

**Cisco Transport Manager (CTM 4.x) (Network Management)**
- Carrier-class element management system
- Ideal for service provider and enterprise networks
- Supports Cisco ONS 15454/15327/15600 (SONET/SDH), 15540, 15530, 152xx, 1580X systems
- Manages fault/performance/configuration/alarm/security/inventory/administrative tasks
- Native Circuit/Equipment Provisioning for 15454/15327/15600 SONET/SDH product family
- Northbound interfaces include SNMP, TL1 and CORBA
- Integrates into OSS/BSS systems
- Requires SUN/Solaris/UNIX server and Oracle database

**Cisco 10720 Internet Router**
- Service provider-class metro access services router
- Optimized building block for the next generation metro IP network
- Equipped with 24 ports of Ethernet technology for customer access and dynamic packet transport (DPT) technology for metro optical connectivity
- Powered by Cisco IOS software and the parallel express forwarding (PXF) architecture
- Cost-effective, reliable platform supporting full suite of IP routing protocols
- 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
Cisco ONS 15200 Optical Metro DWDM Series

The Cisco ONS 15252, 15201, and 15216 are part of the Cisco ONS 15200 Metro DWDM family, the first solution to deliver instant wavelengths to buildings, premises, or PoPs.

The ONS 15252 and 15201 may be used to realize many sub-network topologies and can handle a mixture of point-to-point, hubbed, and meshed traffic patterns. Capacity may be added channel-by-channel in a highly cost-effective manner. Since they feature broadband transponders, a wide range of traffic types may be handled (SONET/SDH, Gigabit Ethernet) over a range of line rates up to 2.5 Gbs. Channel protection options include unprotected, client-protected, and (optical channel) fiber protection. The ONS 15252 is a multi-channel unit and the ONS 15201 is a single channel unit node. Both have exceptionally small footprints and low power consumption.

The Cisco ONS 15216 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 optical filter solution enables service providers to deploy point-to-point, bus, and ring networks using the terminal filter multiplexing and demultiplexing and OADM. The Cisco ONS 15216 platform provides an open and flexible solution to combine wavelengths launched by the Cisco ONS 15454, ONS 15252, ONS 15201, and ONS 15540. The Cisco ONS 15216 supercharges wavelength services and extends Cisco's optical leadership to metro regional DWDM.

For More Information
See the ONS 15200 Series Web site: http://www.cisco.com/go/ons15200

Cisco ONS 15302/15305 SDH Multiservice CPE & Aggregation Platforms

The Cisco ONS 15302/ONS 15305 Multiservice CPE and Aggregation solutions are ultra-compact integrated systems that offer cost effective solutions with short ROI. These platforms provide native multiservice capabilities (i.e., TDM interfaces, multiplexing and Ethernet data interfaces). These products can be managed under Cisco Transport Manager (CTM), Cisco’s unified optical network management system.

The ONS 15302 CPE platform provides the following TDM interfaces—STM-1 uplink (protected or unprotected STM-1 optical uplink, 1+1 MSP, future SNCP) and E1 customer interfaces (12 E1 ports). This product also 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
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 DWDM (dense wavelength division multiplexing) multiservice aggregation platform. The ONS 15530 can be used in applications such as storage networking, data networking, transparent wavelength services, and legacy SONET / SDH / ATM. These features make the ONS 15530 an excellent choice for building a scalable, ultra-high-bandwidth-ready, intelligent optical aggregation and transport infrastructure.

Key Features
• Aggregation—up to 40 ports of ESCON or 8 ports of Fibre Channel, FICON, or Gigabit Ethernet per wavelength, lowering total cost of ownership through bandwidth efficiency
• Scalability—up to 32 wavelengths ranging from 2.5Gbps to 10Gbps for network growth and design flexibility
• Multiservice Interfaces—protocol-independent transponders supporting data rates between 16Mbps to 2.5Gbps for protocols such as ESCON, FICON, Fibre Channel, 2G Fibre Channel, Gigabit Ethernet, SONET/SDH, Digital Video, and other protocols
• Cost-efficient point-to-point fiber trunk protection capability using the Protection Switch Module
• Complete Amplification Solution—Together with ONS 15501 EDFA optical amplifier, the VOA modules enables enterprises and service providers to further expand their optical DWDM networks over greater distances.
• Design Flexibility—can be used to deploy Point-to-point, Hub Ring, or Mesh Ring networks
• Network assurance—through high availability and resilient optical design
• IOS-based—easily integrates into existing Cisco networks

For More Information
See the Cisco ONS 15530 Web site: http://www.cisco.com/go/ons15530
Chapter 8 Optical Transport

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
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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 Tuneable Variable data rate Type 1 Transponders: 16Mbps to 622Mbps MM fiber support; 16Mbps to 2.5Gbp SM fiber support; 16 Tuneable transponders support 32 channels for reduced sparing costs; Multi-protocol support for Enterprise
- Tuneable Type 2 Transponders with Multi Protocol Small form Factor Pluggables (SFPs): Variable data rate support between 16Mbps to 2.5Gbps; 16 Tuneable transponders support 32 channels for reduced sparing costs; Multi-protocol SFP Support
- 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](http://www.cisco.com/go/ons15500)

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 edgenetworks for service provisioning and network management.

For More Information
See the ONS 15600 Series web site: [http://www.cisco.com/go/ons15600](http://www.cisco.com/go/ons15600)
Cisco Transport Manager (CTM 4.x) (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.
Cisco IOS® Software & Network Management Products at a Glance

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<tr>
<th>Product</th>
<th>Features</th>
<th>Page</th>
</tr>
</thead>
</table>
| CiscoWorks for Windows | An entry level suite of integrated network management tools for smaller networks:  
- Event management and topology mapping application  
- Includes Cisco’s popular CiscoView Element Mangement Tool | 9-2 |
| Cisco IOS Software | Feature rich network operating system supported on a wide range of Cisco products  
- 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 | 9-4 |
| CiscoWorks Small Network Management Solution | Web-based network management solution designed for small to medium businesses (SMB):  
- Event management and topology mapping application  
- Includes Cisco’s popular CiscoView Element Management Tool | 9-11 |
| CiscoWorks Routed WAN Management Solution | Provides key applications needed to manage Cisco switch-based enterprise campus networks.  
This bundle includes Campus Manager, Device Fault Manager, nGenius Real Time Monitor, Resource Manager Essentials, and CiscoView | 9-14 |
| CiscoWorks LAN 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). This bundle includes Secure Policy Manager, VPN Monitor, Resource Manager Essentials, and CiscoView | 9-16 |
| CiscoWorks IP Telephony Environment Monitor | Enables centralized administration and automated deployment of bandwidth reservation and prioritization policies for critical network applications  
- Differentiates services of Web applications, voice traffic, and business-critical applications | 9-18 |
| CiscoWorks QoS Policy Manager (QPM) | Enables complete remote management and troubleshooting of the customer demarcation point for Ethernet over fiber  
- Monitors LEAP authentication servers  
- Enhances security management through mis-configuration detection on access points and bridges | 9-21 |
| Cisco Catalyst 6500 Series Network Analysis Modules 1 and 2 | RAS 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. | 9-23 |
CiscoWorks for Windows

CiscoWorks for Windows is a powerful set of network management tools to easily manage your small to medium network or workgroup. It provides information such as dynamic status, statistics, and comprehensive configuration information for Cisco routers, switches, hubs, and access servers. Using the included WhatsUp Gold from Ipswitch, you can also monitor printer, workstations, servers and important non Cisco network services.

When to Sell

Sell This Product

CiscoWorks for Windows

When a Customer Needs These Features

- A single solution for managing all resources attached to a small multivendor network
- A smaller solution, where centralize management of configurations of a software distribution is not needed
- Low-cost network management
- Needs to quickly understand basic network connectivity, access individual device configurations and statistics, and troubleshoot problems

Also available for small and medium size customers is the CiscoWorks Small Network Management Solution (Small NMS). Small SNMS includes all the features above and includes CiscoWorks Resource Manager Essentials (Essentials) which provides additional functionality that allows the customer to build and maintain an up-to-date hardware and software inventory for up to 20 devices in a network.
Key Features

CiscoWorks for Windows provides the following features when used in conjunction with WhatsUp Gold from Ipswitch (included in the CiscoWorks for Windows package):

- Automatic discovery process for networked devices
- Management of network hardware, printers, servers, and workstations
- Customizable monitoring of services such as FTP and HTTP
- Access to extensive data on port status, bandwidth utilization, traffic statistics, protocol information, and other network performance statistics
- Flexible graphing capabilities for quickly recording and analyzing historical data that can be exported to files
- Management Information Base (MIB) compiler and browser for managing third-party SNMP devices
- Tools to simplify device configuration and management for Cisco routers, switches, and access servers
- Threshold management features that can be set for many performance variables to generate an alarm or event notification
- Flexible event notification, including voice, paging, and e-mail notification of user-defined events

CiscoWorks for Windows Components

CiscoWorks for Windows includes the following tools:

- WhatsUp Gold from Ipswitch, Inc.—Provides network discovery, mapping, monitoring, and alarm tracking
- CiscoView—Provides back- and front-panel displays; dynamic, color-coded graphical displays simplify device-status monitoring, device-specific component diagnostics, and application launching
- Threshold Manager—Enhances the ability to set thresholds on Cisco RMON-enabled devices, reducing management overhead and improving troubleshooting capabilities
- StackMaker— Allows users to combine multiple Cisco devices of specific types into a single stack and visually manage them in a single window
- Show Commands—Displays detailed router system and protocol information without requiring the user to remember complex Cisco IOS Software command-line languages or syntax

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>CiscoWorks for Windows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Requirements</td>
<td>266 MHz Pentium-based IBM PC or compatible computer</td>
</tr>
<tr>
<td></td>
<td>128 MB RAM total</td>
</tr>
<tr>
<td></td>
<td>1 GB free hard drive space</td>
</tr>
<tr>
<td>Software Requirements</td>
<td>Windows 98, Windows NT 4.0, or Windows 2000</td>
</tr>
<tr>
<td></td>
<td>Netscape 4.81, 4.7, 4.7R or Internet Explorer 5.0, 5.1, 5.5</td>
</tr>
</tbody>
</table>

Selected Part Numbers and Ordering Information

<table>
<thead>
<tr>
<th>CiscoWorks for Windows</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CW-61-WIN</td>
<td>CiscoWorks for Windows 6.1</td>
</tr>
<tr>
<td>CW-61-WIN-UP</td>
<td>Upgrade to CW 6.1 from Windows from CW 5.0</td>
</tr>
<tr>
<td>CW-61-WIN-MR</td>
<td>Maintenance Release: Requires existing CW 6.0-June 02</td>
</tr>
</tbody>
</table>
Cisco IOS® Software

Cisco’s IOS Software is a feature-rich network operating system that provides network intelligence for the majority of today’s Internet and for most of the world’s business-critical networking applications.

Supporting Cisco’s extensive range of platforms, Cisco IOS Software provides a common IP fabric, functionality and command-line interface (CLI) across network infrastructures. Cisco IOS Software enables a vast array of key routing functions, multi-service capabilities, traffic shaping, connections, security/firewall protection, traffic monitoring, and highly flexible network and product configuration.

Below is an abbreviated list of key capabilities, intelligent network technologies, and architectures enabled by Cisco IOS Software:

- Quality of Service (QoS)
- Converged data, voice, and video over IP
- IP/ATM/Frame Relay network connectivity and scalability features
- Security/firewall/IPSec/access lists
- Traffic monitoring and NetFlow based monitoring, accounting, and billing
- Wide range of routing protocols (including MPLS)
- IPv6
- multicast

Quality of Service (QoS)

The promise of networking is sharing networked resources among many users and applications for greater productivity and competitive advantage. Cisco IOS quality of services (QoS) capabilities enable complex networks to control and predictably service a variety of applications. Every network needs QoS for optimum efficiency, whether it is for a small business, large enterprise, or a service provider.

QoS expedites the handling of mission-critical applications, while sharing network resources with non-critical applications. QoS also ensures available bandwidth and minimum delays required by time-sensitive multimedia and voice applications. It also gives network managers control over network applications, improves cost-efficiency of WAN connections, and enables advanced differentiated services. QoS technologies are elemental building blocks for other Cisco IOS enabling services—particularly for converged data and voice networks (LAN/WAN + telephony), video conferencing over IP, and IBM networking, and for future business applications in campus, WAN, and service provider networks.

**Key QoS Capabilities:**

<table>
<thead>
<tr>
<th>Committed Access Rate (CAR)</th>
<th>Performs two QoS functions:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Bandwidth management through rate limiting, which allows you to control the maximum rate for traffic sent or received on an interface</td>
</tr>
<tr>
<td></td>
<td>• Packet classification through IP precedence and QoS group setting, which allows you to partition your network into multiple priority levels or classes of service (CoS)</td>
</tr>
</tbody>
</table>

| Differentiated Services (DiffServ) | QoS architecture that divides traffic into a small number of classes and provides QoS to large aggregates of traffic by treating some traffic better than the rest (faster handling, more bandwidth on average, lower loss rate on average). This is a statistical preference, not a hard and fast guarantee. |

| Expedited Forwarding (EF) | Per-Hop Behavior (PHB) in the DiffServ standard, used to create a virtual leased line service. |
Key QoS Categories

Integrated Services (IntServ)
A QoS architecture in which each network element is required to identify the coordinated set of QoS control capabilities it provides in terms of the functions it performs, the information it requires, and the information it exports.

Random Early Detection (RED)
Monitors traffic loads on large networks to prevent congestion and guarantee priority traffic delivery.

Resource Reservation Protocol (RSVP)
A protocol that supports the reservation of resources across an IP network.

Weighted Fair Queueing (WFO)
Adds new levels of control to previous queueing methods.

Weighted Random Early Detection (WRED)
Combines the capacities of the random early detection (RED) algorithm with IP precedence or the differentiated services code point (DSCP). This combination provides for preferential traffic handling for higher-priority packets.

Converged LAN/WAN and Telephony Networks

A broad range of Cisco products support standards-based voice over packet implementations, including H.323-based Voice over IP (VoIP). These products enable highly efficient, converged IP-based telephony in today’s enterprise and service provider networks, thereby eliminating the need for legacy telephone equipment and overlay networks (including PBXs and central office circuit switched network equipment). Furthermore, a single IT organization can now support campus and enterprise requirements—regardless if for data, voice, or video requirements.

In addition, Cisco voice over packet technologies enable businesses and service providers to avoid long distance telephone charges by leveraging their existing data networks, instead of paying for dedicated voice connections and circuits.

Cisco Connectivity and Scalability Solutions

A wide range of access solutions are enabled via Cisco IOS Software including:
- Virtual Private Networking; DSL; Dial Access (including ISDN, modem, fax, voice)
- Frame Relay, X.25
- ATM; VoIP, VoFR, VoATM
- SONET, OC-x/STM-x, Packet-over-SONET
- Broadband Services Aggregation (includes large-scale PPPoE, PPPoA, L2TP tunneling)
- Cable Access Solutions

Security

Cisco’s powerful suite of Cisco IOS Software-embedded security and firewall technologies includes:

<table>
<thead>
<tr>
<th>Security Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Signature Standard (DSS) and digital certification</td>
<td>Positively authenticates users or devices</td>
</tr>
<tr>
<td>Network Address Translation (NAT) and Port Address Translation (PAT)</td>
<td>Hides private topology and IP addresses from an external network</td>
</tr>
<tr>
<td>IPSec</td>
<td>Enables secure communications of data over public networks</td>
</tr>
</tbody>
</table>
Cisco IOS Software

Cisco IOS NetFlow

NetFlow technology provides the metering base for a key set of applications including network traffic accounting, usage-based network billing, network planning, network monitoring, outbound marketing, and data mining capabilities for both service provider and enterprise customers. Cisco provides a set of NetFlow applications to collect exported NetFlow data, to perform data volume reduction, and to post-process and display data. Cisco is currently working with a number of partners to provide customers with comprehensive solutions for NetFlow-based billing, planning, and monitoring. NetFlow also provides the measurement base for Cisco’s new Internet Quality of Service (QoS) initiatives. NetFlow captures the traffic classification or precedence associated with each flow, enabling differentiated charging based on Quality of Service. Furthermore, the combination of NetFlow data along with Cisco IOS Software-based routing information can prove key to developing effective security policies and preventive measures for Denial of Service (DoS).

Cisco IOS Routing Services

Cisco IOS Software has long been recognized for its rich support of multiple protocols including IP, Novell IPX, SNA, AppleTalk, DECnet, OSI, and Banyan VINES

IP Routing Protocols

Cisco IOS Software offers the industry’s widest variety of enterprise and service provider-class routing protocols, including 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), Border Gateway Protocol (BGP), and MPLS

Multi Protocol Label Switching (MPLS)

Cisco IOS MPLS 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.
Common MPLS Applications Available with Cisco IOS Software

- Traffic engineering is enabled through MPLS mechanisms that allow traffic to be directed through a specific path, which may not necessarily be the least-expensive path. Network managers can implement policies to ensure optimal traffic distribution and improve overall network utilization.
- Guaranteed bandwidth is a value-added enhancement to traditional traffic-engineering mechanisms. MPLS lets service providers deliver guaranteed pipes and bandwidth allocations. Guaranteed bandwidth also allows bookkeeping of quality-of-service (QoS) resources to traffic engineer both premium and best-effort traffic such as voice and data.
- Fast reroute (FRR) allows extremely quick recovery if a node or link fails. Such fast recovery prevents end-user applications from timing out and also prevents loss of data.
- MPLS VPNs greatly simplify service deployment compared to traditional IP VPNs. As the number of routes and customers increases, MPLS VPNs easily scale, while providing the same level of privacy as Layer 2 technologies. In addition, they can transport non-unique IP addresses across a public domain.
- MPLS class-of-service (CoS) capability ensures that important traffic is given the appropriate priority over the network and that latency requirements are met. IP QoS mechanisms can be seamlessly implemented in an MPLS environment.

MPLS Mechanisms

Cisco IOS MPLS delivers both traffic engineering (TE) and VPN solutions built on the following mechanisms:
- Cisco AutoBandwidth Allocator: Automatically increases or decreases MPLS TE tunnel bandwidth based on measured traffic load.
- Constraint-based Routing Label Distribution Protocol (CR-LDP): A signaling mechanism used to support TE across a MPLS backbone.
- Fast Reroute (FRR): Enables quick recovery in case of link failures, which prevents end-user applications from timing out and also prevents loss of data.
- Label Distribution Protocol (LDP): Provides communication between edge and core devices. It assigns labels in edge and core devices to establish Label Switched Paths (LSPs) in conjunction with routing protocols such as OSPF, IS-IS, EIGRP, or BGP.

For More Information

See the Cisco IOS MPLS Web site: http://www.cisco.com/go/mpls
Chapter 9  IOS Software & Network Management

IP Multicast and Multicast Solutions

IP 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.

Multicast technology is key to preventing severe network slowdown and Cisco IOS Multicast is the gateway to Internet broadcasting applications. Internet service providers (ISPs) and content providers use Cisco IOS multicast solutions successfully to host events such as live concerts, radio shows, and football games.

Another application of multicast technologies relates to replacing dedicated point-to-point telephone/voice circuits and specialized bridging and mixing multi-user audio conferencing telephone equipment for “always-on” service (referred to in some industries as “Hoot & Holler” systems). This ability eliminates the need for dedicated, costly, overlay voice networks and point-to-point telephone company circuits, and allows the same capabilities to be implemented over a converged IP network without requiring users to dial in.

Multicast Solutions

Cisco IOS Multicast solutions are classified as Multicast-Lite, Core Multicast, and Enhanced Multicast, and are the building blocks for Internet broadcast. Customers can start with Multicast-Lite, then add more sophisticated interactive communication capabilities, as needed.

- **Multicast-Lite** provides for one-to-many broadcast capability with no back channel. This solution is eminently suitable for content distribution and broadcasting over the Internet. It does not require setting up of source discovery across domains and autonomous systems. Multicast Lite includes Protocol Independent Multicast version 2 (PIMv2), Internet Group Management Protocol (IGMPv1/v2/v3) or Universal Resource Locator Rendezvous Directory (URD).

- **Core Multicast** provides interactive, reliable campus multicast for interactive distance learning, corporate videoconferencing, inventory updates, software distribution, and content distribution. Core Multicast includes PIM, IGMP, Cisco Group Management Protocol (CGMP), and now Pragmatic General Multicast (PGM).

- **Enhanced Multicast** provides interactive Internet Multicast across domains for network gaming, inter-company conferencing, Internet software distribution, and extranet content distribution. Enhanced Multicast includes Multicast Border Gateway Protocol (MBGP) and Multicast Source Discovery Protocol (MSDP) in addition to all the protocols supported in Core Multicast.

Multicast is available across all Cisco IOS Software-based platforms, including Cisco routers and Catalyst family switches. Multicast-supported routing platforms include the following: Cisco 1600, 2500, 2600/2600XM, 3600, 3700, 3800, 7200, 7500, and 12000 series; it also is available on Catalyst 6000 and 8500 platforms.
Cisco has the greatest depth of experience with IP Multicast in the industry, and offers multicast features such as:

- **Bi-dir PIM**: An extension to the PIM suite of protocols that implements shared sparse trees with bi-directional flow of data.
- **Cisco Group Management Protocol (CGMP)**: Cisco-developed protocol that allows Layer 2 switches to leverage IGMP information on Cisco routers to make Layer 2 forwarding decisions.
- **Internet Group Management Protocol v2 (IGMP)**: Used by IP routers and their immediately connected hosts to communicate multicast group membership tables:
  - Query: IGMP messages originating from the router(s) to elicit multicast group membership information from its connected hosts
  - Report: IGMP messages originating from the hosts that are joining, maintaining or leaving their membership in a multicast group
- **Internet Group Management Protocol v3 (IGMP)**: Version 3 of IGMP adds support for “source filtering,” that is, the ability for a system to report interest in receiving packets only from specific source addresses, or from all but specific source addresses, sent to a particular multicast address.
- **IGMP Snooping**: Requires the LAN switch to examine, or “snoop,” some Layer 3 information in the IGMP packet sent from the host to the router. When the switch hears an IGMP Report from a host for a particular multicast group, the switch adds the host’s port number to the associated multicast table entry. When it hears an IGMP Leave Group message from a host, it removes the host’s port from the table entry.
- **Inter domain Multicast**: Supports inter-domain routing and source discovery across the Internet or across multiple domains comprising an enterprise.
- **Intra domain Multicast**: Supports multicast applications within an enterprise campus.
- **Multicast Source Discovery Protocol (MSDP)**: A mechanism to connect multiple PIM sparse-mode (SM) domains. MSDP allows multicast sources for a group to be known to all rendezvous point(s) (RP(s)) in different domains.
- **Multicast Routing Monitor (MRM)**: A management diagnostic tool that provides network fault detection and isolation in a large multicast routing infrastructure.
- **Multi-protocol Extensions for Border Gateway Protocol (MBGP)**: Also known as BGP+, MBGP adds capabilities to BGP to enable multicast routing policy throughout the Internet and to connect multicast topologies within and between BGP autonomous systems.
- **Pragmatic General Multicast (PGM)**: A reliable multicast transport protocol for applications that require ordered, duplicate-free multicast data delivery from multiple sources to multiple receivers. PGM guarantees that a receiver in a multicast group either receives all data packets from transmissions and retransmissions, or can detect unrecoverable data packet loss.
- **Protocol Independent Multicast (PIM)**: A multicast routing architecture that enables IP multicast routing on existing IP networks:
  - SM = Sparse Mode (RFC 2362): Relies upon an explicitly joining method before attempting to send multicast data to receivers of a multicast group.
  - DM = Dense Mode (Internet Draft Spec): Actively attempts to send multicast data to all potential receivers (flooding) and relies upon their self-pruning (removal from group) to achieve desired distribution.
- **Unidirectional Link Routing (UDLR) Protocol**: A routing protocol that provides a way to forward multicast packets over a physical unidirectional interface (such as a satellite link or a high bandwidth line) to stub networks that have a back channel.
- **URL Rendezvous Directory (URD)**: Directly provides the network with information about the specific source of a content stream. It enables the network to quickly establish the most direct distribution path from the source to the receiver, thus significantly reducing the time and effort required in receiving the streaming media. URD allows an application to identify the source of the content stream through a web page link or web directly.

For More Information

See the Multicast Web site: [http://www.cisco.com/go/multicast](http://www.cisco.com/go/multicast)
IPv6

Internet Protocol version 6 (IPv6), most notably offers expanded IP addresses to accommodate the proliferation of Internet devices such as personal computers, personal digital assistants, wireless devices, and new Internet appliances—and the expansion of Internet access, particularly “always-on” connections throughout the world. IPv6 also provides integrated auto-configuration for “plug-and-play” capabilities, enhanced mobility and end-to-end security.

Incorporating IPv6 into Cisco IOS Software further enables growth of the Internet and expansion into new applications and capabilities, while maintaining compatibility with existing Internet services. Cisco's IPv6 solution was first made available in Cisco IOS Software Release 12.2(1)T. Platforms supported include: Cisco 800, 1700, 2500, 2600/2600XM, 3600, 7100, 7200, and 7500 Series Routers, and Cisco AS5300 and AS5400 Universal Access Servers.

For more information
See the Cisco IOS IPv6 Web site: http://www.cisco.com/go/ipv6

Cisco IOS Software Release Process

There are three categories of Cisco IOS Software releases: Early Deployment, Major, and General Deployment (GD) releases.

• Early Deployment releases (i.e. T, S, X, E release families)—Provide advanced networking technologies to customers for delivery of leading-edge Internet applications. These offer new software capabilities, new platforms, and interface extensions. Customers for whom receiving a new feature is critical to their competitive advantage will benefit from these releases.

• Major releases (i.e. Release 12.2)—Consolidate features, platform support, and functionality from early deployment releases, and emphasize stability. Regular maintenance releases do not introduce new functionality or platform support, but provide continuous improvement and greater quality, leading to general deployment.

• General Deployment certification (i.e. Release 12.0) Releases—Have had extensive market exposure in a wide range of network environments and are qualified through extensive metrics that analyze stability, software defect trends, and customer satisfaction surveys. Used for major, business-critical applications.

At some point, GD releases are replaced by newer releases with the latest networking technologies. A release retirement process has been established with three principal milestones: End of Sales (EOS), End of Engineering (EOE), and End of Life (EOL).

For More Information on Cisco IOS Software
See the Cisco IOS Software Web site: http://www.cisco.com/go/ios
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

Cisco Network Management Products
The CiscoWorks product line offers a set of solutions designed to manage the enterprise network. These solutions focus on key areas in the network such as; optimization of the wide area network (WAN), administering switch-based local area networks (LAN), securing remote and local virtual private networks, and measuring service level agreements within all types of networks. The expanding CiscoWorks product line offers the flexibility to deploy end-to-end network management when and where it is needed.

CiscoWorks Small Network Management Solution
CiscoWorks SNMS is a new network management solution aimed at small to medium businesses (SMB), with 20 or fewer switches, routers, hubs and access servers. CiscoWorks SNMS can also monitor non-Cisco IT assets such as servers, applications, services and printers. CiscoWorks SNMS is an ideal solution for companies that need centralized network management to help optimize performance and maximize network productivity.

When to Sell

<table>
<thead>
<tr>
<th>Sell This Product</th>
<th>When a Customer Needs These Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>CiscoWorks Small Network Management Solution</td>
<td>- Simple integrated installation, autodiscovery and automated import of devices using SNMP</td>
</tr>
<tr>
<td></td>
<td>- Standards-based multi vendor management</td>
</tr>
<tr>
<td></td>
<td>- Reduce the time and complexity of keeping the networks’ configuration, software version and connectivity optimized</td>
</tr>
</tbody>
</table>

Also available for small and medium size customers is the CiscoWorks for Windows (CWW). CWW includes all the features above except for CiscoWorks Resource Manager Essentials (Essentials) which provides additional functionality that allows the customer to build and maintain an up-to-date hardware and software inventory for up to 20 devices in a network.
Key Features

- Monitors and reports on hardware, configuration, and inventory changes
- Provides a wizard-based approach for managing and deploys configuration changes and software image updates to multiple Cisco devices
- Allows configuration changes to be performed against multiple switches or routers in the network
- Provides software update analysis reports showing prerequisites and impacts of proposed updates
- Provides a comprehensive audit of network changes, showing who changed what, when, and how
- Summarizes syslog events by severity or user criteria for switches, routers, and Cisco IOS and PIX firewalls
- Discovery and mapping wizard displays customizable vector-based graphics and hierarchical maps of networked devices

CiscoWorks Small Network Management Solution Components

CiscoWorks Small Network Management Solution includes the following tools:

- CiscoView 5.3—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
- WhatsUp Gold 7.0 from Ipswitch, Inc.—Provides network discovery, mapping, monitoring, and alarm tracking
- Resource Manager Essentials 3.3.2—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 20 or fewer Cisco devices.

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>CiscoWorks Small Network Management Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Requirements</td>
<td>2 Pentium III or better-based IBM PC or compatible computer; 256 MB RAM total, 4 GB free hard drive space</td>
</tr>
<tr>
<td>Software Requirements</td>
<td>Windows 2000 with SP1 or 2 (Professional or Server), Netscape 4.77, 4.78 or Internet Explorer 5.5 with Service Pack 1</td>
</tr>
</tbody>
</table>

Selected Part Numbers and Ordering Information

CiscoWorks Small Network Management Solution

CWSNM-1.0-WIN Small Network Management Solution 1.0 for Windows; includes WhatsUp Gold 7.0, Resource Manager Essentials 3.3.2 (20 Cisco Device restriction), CiscoView 5.3

For More Information

See the CiscoWorks Small Network Management Solution Web Site:
http://www.cisco.com/go/wrsnms
CiscoWorks Routed WAN Management Solution

The RWAN solution addresses the needs of managing WANs by improving the accuracy, efficiency, and effectiveness of your network administrators and operations staff while increasing the overall availability of your network through proactive planning, deployment, and troubleshooting tools. The CiscoWorks Routed WAN Management Solution provides increased visibility into network behavior, assists in quickly troubleshooting performance bottlenecks, and provides comprehensive tools to easily administer new software and configuration changes for optimizing bandwidth and utilization across expensive and critical links in the network.

When to Sell

<table>
<thead>
<tr>
<th>Sell This Product</th>
<th>When a Customer Needs These Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routed WAN Management Solution</td>
<td>• Optimize router performance by automatically streamlining access control lists, and applying policy-based changes via templates</td>
</tr>
<tr>
<td></td>
<td>• Understand the responsiveness of WAN connections to determine where bottlenecks are; provides real-time analysis of end-to-end hop delays</td>
</tr>
<tr>
<td></td>
<td>• Increase network performance by monitoring traffic of protocols, applications, and interface characteristics</td>
</tr>
<tr>
<td></td>
<td>• A watchdog system to monitor WAN characteristics</td>
</tr>
<tr>
<td></td>
<td>• An accurate inventory baseline; including memory, slots, software versions, and boot ROMs needed to make decisions</td>
</tr>
<tr>
<td></td>
<td>• Automate the process of updating device software and configuration</td>
</tr>
<tr>
<td></td>
<td>• Graphically displays a devices operational status with tools to monitor its activity or change its configurations</td>
</tr>
<tr>
<td></td>
<td>• Support for secure browser communications and downloads from CiscoView, RME and ACLM via Secure Socket Layer (SSL) or Secure Shell (SSH) protocol</td>
</tr>
</tbody>
</table>

Key Features

• Access Control List Manager—Provides a wizard and policy template-based approach to simplifying the setup, management, and optimization of Cisco IOS Software-based IP and Internetwork Packet Exchange (IPX) traffic filtering and device access control

• Internetwork Performance Monitor—Used to diagnose latency, identify network bottlenecks, and analyze response times

• 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
Chapter 9  IOS Software & Network Management

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Routed WAN Management Solution Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server</td>
<td>Sun UltraSPARCIII (Sun Blade 1000 Workstation or Sun Fire 280R Workgroup Server)</td>
</tr>
<tr>
<td></td>
<td>IBM PC compatible with 550-MHz or higher Pentium III processor running (Dual processor system required for</td>
</tr>
<tr>
<td></td>
<td>hosting multiple management solutions)</td>
</tr>
<tr>
<td>Client</td>
<td>IBM PC compatible computer with 300-MHz or higher Pentium processor, Sun Ultra 10, HP9000 Series, IBM</td>
</tr>
<tr>
<td></td>
<td>RS/6000</td>
</tr>
<tr>
<td></td>
<td>Windows NT 4 (Workstation and Server) with Service Pack 6a, Windows 98, 2000 Professional and HP-UX 11.0,</td>
</tr>
<tr>
<td></td>
<td>AIX 4.3.3</td>
</tr>
<tr>
<td>Supported Devices</td>
<td>Most Cisco IOS Software routers, access servers, hubs, and switches</td>
</tr>
<tr>
<td>Supported Cisco IOS</td>
<td>Generally supports Cisco IOS Software Versions 10.3 and above;</td>
</tr>
<tr>
<td>Software Versions</td>
<td>Catalyst Supervisor code 2.1 and above</td>
</tr>
<tr>
<td></td>
<td>Note: Some CiscoWorks applications require specific versions of IOS and CAT these releases in</td>
</tr>
<tr>
<td></td>
<td>order to operate; please see the specific application documentation and release notes for more information.</td>
</tr>
</tbody>
</table>

Selected Part Numbers and Ordering Information

Cisco Routed WAN Management Solution

- CWRW-1.2-K9: Routed WAN Management Solution 1.2 for Windows and Solaris platforms; includes Access Control List Manager 1.4, Internetwork Performance Monitor 2.4, Resource Manager Essentials 3.4, CD One 5th Edition (Includes CiscoView 3.4)
- CWRW-1.2-P1-K9: Cross Bundle Discount RWAN 1.2 for Windows and Solaris platforms; available to customers who have previously purchased LMS 1.2 or LMS 2.2 and want to add RWAN
- CWRW-1.2-MR-K9: Maintenance kit for customers that purchased RWAN 1.2 and now want new device support and code upgrades; kit includes support for Windows and Solaris platforms; includes updates to all components

For More Information

See the Routed WAN Management Solution Web site: [http://www.cisco.com/go/rwan](http://www.cisco.com/go/rwan)

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 servers 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: CiscoWorks LAN Management Solution

When a Customer Needs These Features:

- 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
- RMON traffic monitoring and analysis capability
- 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
• nGenius Real Time Monitor—Web-enabled multiuser traffic management tool set that provides access to network-wide, real-time RMON information for monitoring, troubleshooting, and maintaining network availability
• 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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
</table>
| Server                   | Sun UltraSPARCIII (Sun Blade 1000 Workstation or Sun Fire 280M Workgroup Server)  
                          | IBM PC compatible with 550-M Hz or higher Pentium III processor running (Dual processor system required for hosting multiple management solutions)  
                          | Microsoft Windows 2000 Server or Professional Edition with Service Pack 2, Solaris 2.8  |
| Client                   | IBM PC-compatible computer with 300-M Hz or higher Pentium processor, Sun Ultra 10, IBM RS/6000  
                          | Microsoft Windows NT 4 (Workstation and Server) with Service Pack 6a, Windows 98, 2000 Professional and Server with Service Pack 2, Solaris 2.7, 2.8, HP-UX 11.0, AIX 4.3.3  
                          | Internet Explorer v.5.5 with Service Pack 2, 6.0; Netscape 4.76, 4.77, 4.78, 4.79  |
| Supported Cisco Devices  | Most Cisco IOS Software routers, access servers, hubs, and switches  |
| Supported Cisco IOS       | Catalyst Supervisor code 2.1 through 4.1  |
| Software Versions        | 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.  |
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's 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 PIX Firewalls, Management Center for IDS Sensors, Management Center for VPN Routers, and Monitoring Center for Security and Management center for PIX Firewalls (downloadable from CCO Software Center Fall 2002)
• 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

For More Information

See the LAN Management Solution Web site: [http://www.cisco.com/go/lms](http://www.cisco.com/go/lms)
Cisco Secure Policy Manager (CSPM)—Provides scalable, powerful policy-based security management system for Cisco firewalls and IPSec VPN routers which allows a customer to define, distribute, enforce, and audit network-wide security policies from a central location.

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.

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

<table>
<thead>
<tr>
<th>Feature</th>
<th>CiscoWorks VPN/Security Management Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server Hardware Requirements</td>
<td>IBM PC-compatible computer with 1-GHz or faster Pentium processor</td>
</tr>
<tr>
<td></td>
<td>Sun UltraSPARC 60 MP with 440-MHz or faster processor</td>
</tr>
<tr>
<td></td>
<td>Sun UltraSPARCII (Sun Blade 1000 Workstation or Sun Fire 280R Workgroup Server)</td>
</tr>
<tr>
<td>Server Software Requirements</td>
<td>Windows 2000 Professional, Windows 2000 Server (Service Pack 2)</td>
</tr>
<tr>
<td></td>
<td>Sun Solaris 2.7.2.8</td>
</tr>
<tr>
<td>Client Hardware Requirements</td>
<td>IBM PC-compatible computer with 300-MHz or faster Pentium</td>
</tr>
<tr>
<td></td>
<td>Solaris SPARCstation or Sun Ultra 10</td>
</tr>
<tr>
<td>Client Software Requirements</td>
<td>Windows 98, Windows NT 4.0, or Windows 2000 Server or Professional Edition with Service Pack 2</td>
</tr>
<tr>
<td></td>
<td>Solaris 2.7.2.8</td>
</tr>
<tr>
<td>Browser Requirements</td>
<td>Internet Explorer 6.0 or 5.5 with Service Pack 2, on Windows 2000 Server or Professional Edition, Windows 98, and Windows NT 4.0.</td>
</tr>
</tbody>
</table>

Selected Part Numbers and Ordering Information

CiscoWorks VPN/Security Management Solution

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CWVMS-2.1-URC-K9</td>
<td>Conversion from CiscoWorks VMS 2.1 for Windows (20-device Restricted License) to Unrestricted License (add Solaris Versions of CV, RME, VPN, and adds an unrestricted license to CSPM for Windows)</td>
</tr>
<tr>
<td>CWVMS-2.1-WUPGR-K9</td>
<td>Upgrade from CSPM 2.x (Unrestricted License) to CiscoWorks VMS 2.1 for Windows and Solaris (Unrestricted License)</td>
</tr>
<tr>
<td>CWVMS-2.1-WUPGD-K9</td>
<td>Upgrade from CSPM 2.x (Unrestricted License) to CiscoWorks VMS 2.1 for Windows and Solaris (Unrestricted License)</td>
</tr>
<tr>
<td>CWVMS-2.1-UR-MR-K9</td>
<td>Maintenance release update for VM 2.0 Windows and Solaris (Unrestricted License)</td>
</tr>
<tr>
<td>CWVMS-2.1-R-MR-K9</td>
<td>Maintenance release update for VM 2.0 Windows Only (20-device Restricted License)</td>
</tr>
</tbody>
</table>

1. Contains Windows-only versions of CSPM and IDS Host Sensor

For More Information

CiscoWorks IP Telephony Environment Monitor

CiscoWorks IP Telephony Environment Monitor (ITEM) is a bundled suite of management applications that helps ensure the manageability of converged networks that support Cisco IP telephony and IP telephony data applications. ITEM tracks the health of Cisco IP telephony environments by proactively monitoring the Cisco elements that support voice in the network to alert operations personnel of potential problems in order to minimize IP telephony service interruption.

When to Sell

<table>
<thead>
<tr>
<th>Sell This Product</th>
<th>When a Customer Needs These Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>CiscoWorks IP Telephony Environment Monitor</td>
<td>- Network managers who need to effectively manage their converged networks while maintaining high confidence that their IP telephony environments are performing as expected</td>
</tr>
<tr>
<td></td>
<td>- 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</td>
</tr>
</tbody>
</table>

Key Features

- Cisco Voice Health Monitor (VHM)—tracks the health of Cisco IP telephony environments by proactively monitoring Cisco voice elements in the network to alert operations personnel to potential problems and helps to minimize IP telephony service in network downtime. VHM leverages and requires the services of DFM while providing sophisticated capabilities of its own to ensure timely information on the health of IP telephony environments.
- Cisco Device Fault Manager (DFM)—DFM provides real-time fault detection and determination about the underlying Cisco IP fabric on which the IP telephony implementation executes. DFM reports faults that occur on Cisco network devices, often identifying problems before users of network services realize that a problem exists.
- CiscoView—CiscoView is a web-based graphical device-management technology and is the standard for managing Cisco devices, and providing back and front panel displays. Features include: Real-time monitoring of key information relating to device performance, traffic, and usage, with metrics such as utilization percentage, frames transmitted and received, errors, and a variety of other device-specific indicators.

Optional Drop-In Modules

Fault History Manager

Fault History is an optional drop-in module (downloadable from CCO) 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 CCO) 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.
Chapter 9  IOS Software & Network Management

IP Phone Help Desk Utility
The IP Phone Help Desk Utility is an optional applet (downloadable from CCO) 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 CCO) 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

<table>
<thead>
<tr>
<th>Feature</th>
<th>CiscoWorks IP Telephony Environment Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server Hardware</td>
<td>IBM PC-compatible with 1 GHz or higher Pentium IV processor</td>
</tr>
<tr>
<td></td>
<td>UNIX (if DFM is on Unix platform; Sun UltraSPARC IIIi (Sun Blade 1000 Workstation or Sun Fire 280R Workgroup Server)</td>
</tr>
<tr>
<td></td>
<td>(Dual processor system required for hosting multiple management solutions)</td>
</tr>
<tr>
<td>Server Software</td>
<td>Windows 2000 Server or Professional Edition with Service Pack 2 Solaris 2.8</td>
</tr>
<tr>
<td>Client</td>
<td>IBM PC-compatible computer with 300 MHz or higher Pentium processor</td>
</tr>
<tr>
<td></td>
<td>Windows NT 4 (Workstation &amp; Server) with Service Pack 6a, Windows 2000 Professional &amp; Server with Service Pack 2</td>
</tr>
<tr>
<td></td>
<td>Windows 98/NT/2000; Netscape v4.77, 4.78, 4.79</td>
</tr>
<tr>
<td></td>
<td>Windows 98/NT/2000; Internet Explorer v5.5 with Service Pack 2, 6.0</td>
</tr>
</tbody>
</table>

Selected Part Numbers and Ordering Information

<table>
<thead>
<tr>
<th>CiscoWorks IP Telephony Environment Monitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>CWITEM-1.3-WIN-K9 CiscoWorks IP Telephony Environment Manager 1.3 for Windows Add-On for existing LMS 2.0 and DFM 1.1 customers; includes VHM only</td>
</tr>
<tr>
<td>CWITEM-1.3-WIN-UP CiscoWorks VoIP Health Monitor 1.0 Add-On for existing LMS 2.0 and DFM 1.1 customers; includes VHM only</td>
</tr>
<tr>
<td>CWITEM-1.3-M-R-K9 Maintenance kit for customers that purchased CiscoWorks VoIP Health Monitor 1.0 and now want the new ITEM 1.3 device support and minor updates; kit includes support for Windows platforms only; includes updates to all components</td>
</tr>
</tbody>
</table>

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 for Voice Gateways (CVM) is a client-server, web-based voice management and reporting solution. The application provides enhanced capabilities to configure and provision voice ports, and 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

<table>
<thead>
<tr>
<th>Sell This Product</th>
<th>When a Customer Needs These Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>CiscoWorks IP Telephony Environment Monitor</td>
<td>Network managers who need to maintain a distributed network architecture for increased scalability</td>
</tr>
<tr>
<td></td>
<td>Network Managers who need to manage multiple customer networks from one common server</td>
</tr>
</tbody>
</table>

CiscoWorks Voice Manager for Voice Gateways
Key Features

- Web interface management of voice ports and dial plan generation and management—Create and manage local dial plans and VoIP, VoFR, and VoATM network dial plans
- Report generation—Enhance graphical reporting capabilities with the software provided by an alliance with Telemate.Net (Windows NT), a leading developer of enterprise information management tools; optional capabilities for enhanced reports, custom report creation, and multiple data source record collection exists.
- Optional capabilities to provide reporting on other data sources such as private branch exchanges (PBXs) and selected firewalls
- CiscoView—CiscoView is a web-based graphical device-management technology and is the standard for managing Cisco devices, and providing back and front panel displays. Features include: Real-time monitoring of key information relating to device performance, traffic, and usage, with metrics such as utilization percentage, frames transmitted and received, errors, and a variety of other device-specific indicators

Specifications

Selected Part Numbers and Ordering Information

For More Information

See the Voice Manager for Voice Gateways Web site at:
http://www.cisco.com/go/cw2kvm
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) 3.0 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

<table>
<thead>
<tr>
<th>Sell This Product</th>
<th>When a Customer Needs These Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco QoS Policy</td>
<td>• End-to-end QoS configuration and automated, reliable policy deployment, while eliminating device-by-device command streams</td>
</tr>
<tr>
<td>Manager</td>
<td>• Rules-based policies that combine static and dynamic port applications and host system traffic filters</td>
</tr>
<tr>
<td></td>
<td>• QoS Policy Manager’s Services, including congestion management &amp; avoidance, and traffic-shaping</td>
</tr>
<tr>
<td></td>
<td>• Efficiently translate policies to specific QoS config commands, ensuring consistency across domains</td>
</tr>
<tr>
<td></td>
<td>• Validate policies prior to deploying them quickly and reliably to LAN and WAN policy domains</td>
</tr>
<tr>
<td></td>
<td>• Generate Web-based reports on QoS policies deployed in the network</td>
</tr>
</tbody>
</table>

Key Features

• Provides baseline monitoring which profiles traffic by top applications and a small number of classes before QoS deployment
• Validates QoS deployments by obtaining detailed feedback on traffic patterns after QoS at different points in the network
• Provides statistics related to QoS policies which include traffic matching NBAR filters and action statistics
• Supports CBQoS MIB and CAR MIB
• IP Telephony templates provide pre-defined QoS policies that ensure strict priority for voice traffic in Enterprise networks
• Delivers the appropriate service-level to business-critical applications by supporting the extension of IP packet classification to include application signature, Web URLs, and negotiated ports
• Extend security by defining access control policies to permit or deny transport of packets into or out of device interfaces
• Allows QoS policy validation checking, uploading of existing device configuration, previewing configuration changes, incremental ACL updates, and managing policy distribution

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco QoS Policy Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server Hardware Requirements</td>
<td>IBM PC-compatible computer with 1-GHz or faster Pentium processor \ Sun UltraSPARC 60/Mp with 440-MHz or faster processor \ Sun UltraSPARCII (Sun Blade 1000 Workstation or Sun Fire 28R Workgroup Server)</td>
</tr>
<tr>
<td>Server Software Requirements</td>
<td>Windows 2000 Professional, Windows 2000 Server (Service Pack 2) \ Sun Solaris 2.7, 2.8</td>
</tr>
<tr>
<td>Client Hardware Requirements</td>
<td>IBM PC-compatible computer with 300-MHz or faster Pentium \ Solaris SPARCstation or Sun Ultra 10 Complete</td>
</tr>
<tr>
<td>Client Software Requirements</td>
<td>Windows 98, Windows NT 4.0, or Windows 2000 Server or Professional Edition with Service Pack 2 \ Solaris 2.7, 2.8</td>
</tr>
<tr>
<td>Browser Requirements</td>
<td>Internet Explorer 6.0 or 5.5 with Service Pack 2, on Windows 2000 Server or Professional Edition, Windows 98, and Windows NT 4.0, Netscape Navigator 4.79, on Windows 2000 Server or Professional Edition and Windows 98. Netscape Navigator 4.76 on Solaris 2.7, 2.8</td>
</tr>
</tbody>
</table>
Chapter 9  IOS Software & Network Management

Selected Part Numbers and Ordering Information

Cisco QoS Policy Manager
CWQPM-3.0-WINR-K9  QoS Policy Mgr 3.0 for Windows (Unrestricted License)
CWQPM-3.0-WINL-K9  QoS Policy Mgr 3.0 for Windows (Device Restricted License)
CWQPM-3.0-UPUR-K9  Upgrade to QPM 3.0 for Windows from QPM 1.x or 2.x (Unrestricted)
CWQPM-3.0-URC-K9   Conversion of a QPM 3.0 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

Cisco Ethernet Subscriber Solution Engine

The Cisco Ethernet Subscriber Solution Engine (ESSE) is a hardware-based management system for metro access networks that use the Cisco ONT 1000 Gigabit Ethernet Series Optical Network Terminator. The Cisco ESSE enables complete remote management and troubleshooting of the customer demarcation point for Ethernet over fiber. Remote management and diagnostics reduce operating expenses and increase profitability by eliminating the need for unnecessary visits to the customer premises. The Cisco ESSE runs on the Cisco 1105, which is one rack unit (1RU) high, enabling you to conveniently deploy the Cisco ESSE on the same rack with the rest of your Cisco metro Ethernet network aggregation equipment.

The Cisco ESSE automatically discovers all Cisco ONT 1000 Gigabit Ethernet Series devices in the metro access network, applies the designated configuration, and instantly begins collecting statistics and management information.

When to Sell

Sell This Product
Cisco Ethernet Subscriber Solution Engine

When a Customer Needs These Features
The Cisco Ethernet Subscriber Solution Engine is ideal for service providers seeking to:
• Reduce operating expenses by implementing metro access networks with Ethernet over fiber
• Reduce customer onsite visits, which are time-consuming and expensive
• Perform complete remote configuration and troubleshooting of the Cisco ONT 1000 Gigabit Ethernet Series

Key Features

• Enables service providers to perform remote control of inventory, configuration, statistics, fault management, and troubleshooting on the Cisco ONT 1000 Gigabit Ethernet Series
• Full Layer 1 and Layer 2 remote configuration and monitoring of Optical Network Terminators
• Access to all Ethernet port registers and statistics on the Cisco ONT 1000 Gigabit Ethernet Series
• Easy identification of ONTs with searchable, user-defined properties such as customer name, VLAN ID, and street address
CiscoWorks Wireless LAN Solution Engine

The CiscoWorks WLSE is a specialized, daily operational solution that allows customers to manage the entire Cisco Aironet WLAN infrastructure. It offers powerful, centralized template-based configuration with user-defined device groups to efficiently configure large numbers of access points and bridges. The CiscoWorks WLSE provides centralized firmware updates to facilitate firmware changes throughout the WLAN. It monitors Access Control Server (ACS) authentication servers, supports both Cisco Extensible Authentication Protocol (LEAP) and generic RADIUS servers, and further enhances security management by detecting misconfigurations on access points and bridges. The CiscoWorks WLSE proactively monitors WLAN infrastructures and generates notifications for unavailability and performance degradation. The CiscoWorks WLSE aids in capacity planning by identifying the most used access points, and accelerates troubleshooting by generating client association reports.

When to Sell

**For More Information**

See the Cisco Ethernet Subscriber Solution Engine Web site:

[http://www.cisco.com/go/esse](http://www.cisco.com/go/esse)

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**CiscoWorks Wireless LAN Solution Engine**

The CiscoWorks WLSE is a specialized, daily operational solution that allows customers to manage the entire Cisco Aironet WLAN infrastructure. It offers powerful, centralized template-based configuration with user-defined device groups to efficiently configure large numbers of access points and bridges. The CiscoWorks WLSE provides centralized firmware updates to facilitate firmware changes throughout the WLAN. It monitors Access Control Server (ACS) authentication servers, supports both Cisco Extensible Authentication Protocol (LEAP) and generic RADIUS servers, and further enhances security management by detecting misconfigurations on access points and bridges. The CiscoWorks WLSE proactively monitors WLAN infrastructures and generates notifications for unavailability and performance degradation. The CiscoWorks WLSE aids in capacity planning by identifying the most used access points, and accelerates troubleshooting by generating client association reports.

**When a Customer Needs These Features**

- 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**

- Centralized template-based configuration with hierarchical, user-defined groups
- Plug and play configuration of newly deployed access points and bridges
- Centralized firmware update to facilitate firmware changes
- Access point and bridge misconfiguration alerts to minimize security vulnerabilities
- Proactive monitoring of access points, bridges, ACS authentication servers (both LEAP and generic RADIUS), and the switches connected to the access points
- Configuration and monitoring of virtual LAN (VLAN) and quality of service (QoS) on access points to maximize security and performance
- Access point usage, summary, and client association reports with XML, CSV, and PDF data export
- Secure HTML-based user interface for easy access anywhere
- Upper-layer network management system and operations support system (NMS/OSS) integration with syslog message, SNMP trap, and e-mail notifications
CiscoWorks Hosting Solution Engine

CiscoWorks Hosting Solution Engine is a 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 the network infrastructure and Layer 4-7 network services. HSE automatically discovers the entire data center infrastructure and instantly begins collecting statistics and management information, providing a current snapshot of the managed environment. HSE provides up-to-date information for operational staff to easily pinpoint the source of a problem. HSE itself is a manageable Cisco device with a full Cisco Discovery Protocol implementation and supports Cisco MIB II.

When to Sell

Key Features

- Granular user access to partition network resources for Layer 4-7 services as well as switch ports; authorize user group access to individual application services
- Robust Layer 4-7 service configuration and service activation of content switches
- Monitoring and reporting of SSL Proxy services on Cisco Catalyst 6000 Series with SSL Service Modules and Cisco Content Services Switch
- Flexible fault and performance monitoring of Cisco routers, switches, Cisco PIX® Firewalls, Cisco Content Engines, Cisco Content Switches and L4-7 services
- 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

For More Information


CWWLSE-1105-K9

Wireless LAN Solution Engine 1.0; includes the Cisco 1105 hardware platform and wireless LAN management software version 1.0

For More Information

See the 1105 Hosting Solution Engine Web site: http://www.cisco.com/go/1105hse
Cisco Catalyst 6500 Series Network Analysis Module 1 and 2 (with NAM software version 2.2)

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
Cisco Catalyst 6500 Series Network Analysis Module 1 and 2 (with NAM software version 2.2)

When a Customer Needs These Features
• 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. 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/go/6000nam
Cisco Catalyst 6500 Series Network Analysis Module 1 and 2 (with NAM software)